SERVICE GUIDE

A-dec® Service Guide Volume II

Featuring A-dec 500® and Clinical Products

A-dec® Service Guide Volume II
A-dec 500® and Clinical Products

Copyright

©2007 A-dec™ Inc. All Rights Reserved.
2601 Crestview Drive, Newberg, OR 97132, USA
Printed in USA.

A-dec Inc. makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. A-dec, Inc. shall not be held liable for any errors contained herein or any consequential or other damages concerning the furnishing, performance or use of this material. The information in this document is subject to change without notice. If you find any problems in the documentation, please report them to us in writing. A-dec Inc. does not warrant that this document is error-free.

No part of this document may be copied, reproduced, altered, or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without prior written permission from A-dec Inc.

Publication Number: 85.0816.00

Revision Date: Rev B 2007-04

Trademarks

A-dec, the A-dec logo, A-dec 500, Cascade, Cascade Master Series, Century Plus, Continental, Decade, ICX, Performer, Preference, Preference Collection, Preference ICC, and Radius are registered trademarks in the U.S. Patent and Trademarks office.

Preference Slimline and ICV are also trademarks of A-dec Inc.

Comments and Feedback

Thank you for taking the time to use the *A-dec Service Guide, Vol. II*. We would appreciate any feedback or comments you have about this document. Please mail, email, or phone us with your comments. You can reach us at:

A-dec Inc.
Technical Communications Department
2601 Crestview Drive
Newberg, OR 97132

Reach us by phone at: 1.800.547.1883
email: techcomm@a-dec.com
website: www.a-dec.com

CONTENTS

CHAPTER 1: INTRODUCTION

Inside This Guide 2
Document Conventions 2
Getting Support 3
Customer Service 3
Other Sources of Information 4
Genuine A-dec Parts Catalog 4
A-dec Dental Furniture Technical Packet 4
A-dec Illustrated Parts Breakdown 4
Electronic Documentation 4
OrderNet 4
Serial and Model Numbers 5
A-dec 500 5
Reading Serial Number Labels 6
Service Tools 7
Recommended Tools 7

CHAPTER 2: DENTAL CHAIR

Product Overview 10
A-dec 511 Chair 10
A-dec 511 Chair Specifications 11
Flow Diagram 14
Chair Flow Diagram 14
Service/Usage Information 16
Chair Covers 16
Factory Default Routine 17
Chair Circuit Board Components 18
The Hydraulic System 21
Potentiometer 25
Chair Stop Plate 26
Adjustments 27
Swivel Brake 27
Tension Adjustment 27
Headrest 28

Illustrated Parts Breakdown 29
Part Identification 29
Baseplate and Motor Pump Assembly 30
Hydraulic Hose and Solenoid Assembly.........................32
Lift Cylinder and Link Arm 34
Lower Assembly 36
Upper Structure/Swivel Assembly 38
Back and Tilt Cylinder Assembly 40
Upper (Springs and Cam Assembly) 42
Upper (Seat Assembly)...44
Headrest Assembly 46

CHAPTER 3: PROGRAMMING

Status Icon... 50
Chair Positions 51
Position Buttons..52
Cuspidor Functions 54
Cup Fill 54
Bowl Rinse 54
Customize Cup Fill and Bowl Rinse 54
Dental Light 55
Dental Light Auto Feature.......................................55
Electric Handpiece Settings (Deluxe Touchpad Only)........ 56
Standard Mode 56
Endodontics Mode 58
Other System Choices 60
Intraoral Light Source..60
Touchpad Circuit Board Components 62
Standard Touchpad 62
Deluxe Touchpad..64

CHAPTER 4: DELIVERY SYSTEMS

Product Overview 68

CHAIR-MOUNTED DELIVERY SYSTEMS................ 69

Product Overview (532/533).......................................70
A-dec 500 Delivery System Components...................... 70
Covers.. 72
Whip Assembly 73
Continental Tray Holder (533 only) 74
Flow Diagram (532/533) 76
Adjustments (532/533)..78
Front Mount 78
Front-to-Back Leveling 80
Side-to-Side Leveling 80
Illustrated Parts Breakdown.......................................81
Part Identification 81
Traditional Chair Mounted Delivery System (Model 532)... 82
Continental Chair Mounted Delivery System (Model 533).. 84
Delivery System — Upper Exploded (532 and 533) 86
Delivery System — Lower Exploded (532 and 533) 88
Traditional Holder Assembly (532) 90
Continental Whip Assembly (533) 92
Continental Tray Holder.. 94

SIDE-MOUNTED DELIVERY SYSTEMS.................. 97

Product Overview (542)..98
Components.. 98
Flow Diagrams (542) 100
Leveling/Adjustments (542).................................... 102
Flexarm Counterbalance.......................................102

Illustrated Parts Breakdown (542) 103
Part Identification 103
Side Delivery System 104
Side Delivery System Upper Structure 106
Side Delivery System Covers and Brake 108
Control Head 110
Traditional Holder Assembly 112

CHAIR/SIDE SYSTEMS COMMON FEATURES 115

Product Overview (Chair/Side Delivery Common Features) 116
Internal Control Components 116

Adjustments 118
Covers 118
Rotational Tension Adjustment 119

12 O'CLOCK DELIVERY SYSTEMS 121

Product Overview (12 O'Clock) 122
A-dec 541 12 O'Clock Duo Delivery System 122
A-dec 541 Internal Components 123
Flex-Holder 124
Wiring Service/Usage Information 125
Control Center Covers (541) 125
Doctor's Holder 126

Flow Diagrams 128
Plumbing 129

Adjustments/Maintenance 130
Level the Arm Assembly and Worksurface 130
Worksurface Height 132
Instrumentation Arm Positioning 133

Illustrated Parts Breakdown (541 and 545) 135
Part Identification 135
Duo Delivery System (Model 541) 136
Worksurface Module 138
Mounting Platform Installation 140
Control Center 142
Doctor's Arm Assembly 144
Doctor's Turret, 2" Holder Assembly 146
Vacuum and Upper Structure Assembly 148
Assistant's Holder—Electric 150
Assistant's Holder—Standard 152

A-DEC 500 DELIVERY SYSTEMS COMMON FEATURES 153

Product Overview (All Delivery) 154
A-dec Tubing 154
Data Communication System 159
Circuit Board Components 160
Brake Handle 162
Accessory Holder 162
Master On/Off Toggle 163
Flush Toggle 164
Traditional Tray Holder 165
Foot Control 166
Self-Contained Water Bottle 167
Standard Syringe 168

Warm Water Syringe.......... 169
Tooth Dryer.......... 171

Adjustments (Common Features).......... 172
Control Block.......... 172
Tray Holder.......... 175
Intraoral Light Source Voltage.......... 176

Flow Diagrams.......... 177
Foot Control.......... 177

Service/Usage Information.......... 178
Remove the Control Block.......... 178

Illustrated Parts Breakdown (Cross System).......... 179
Part Identification.......... 179
Control Block Assembly.......... 180
Water Coolant Relay Assembly.......... 182
Dual Solenoid Manifold Assembly (Dlx Touchpad Only)... 184
Master On/Off Toggle.......... 186
Flush Toggle.......... 188
A-dec Foot Control.......... 190
Foot Control Accessory Button and Wet/Dry Toggle Valve 192
Foot Control Signal Relay Main Body Valve.......... 194
Oil Collector.......... 196
Brake Handle Assembly.......... 198
Traditional Tray Holder.......... 200
Holder (532,533 and 542).......... 202
Holder (541 and 545).......... 206
Self-Contained Water Bottle.......... 208
Self-Contained Water Bottle Housing (Cabinet-Mounted) 210
Self-Contained Water Bottle Housing (Chair-Mounted)... 212
Traditional and Continental Syringes.......... 214
Warm Water Traditional and Continental Syringes.......... 216
Autoclavable HVE Standard and 11/15 mm.......... 218
Autoclavable HVE with Large Bore 15mm (541 and 545) 219
Autoclavable Saliva Ejector.......... 220

ASSISTANT'S INSTRUMENTATION.......... 223

Product Overview (551).......... 224
Components.......... 224
Holders.......... 226
Assistant's Touchpad.......... 228
Solids Collector.......... 230
Tip-Up Feature.......... 231

Flow Diagrams (551).......... 232
Standard Holder.......... 232
Electric Holder.......... 233

Adjustments (551).......... 234
Left or Right Conversion.......... 234

Product Overview (545).......... 235
Components.......... 235
Holders.......... 236
Solids Collector.......... 238

Flow Diagram (545).......... 239
Plumbing Diagram.......... 239
Plumbing Diagram.......... 240

Leveling (545).......... 241
Arm Assembly.......... 241
Worksurface.......... 243

Adjustments (545).......... 244
Worksurface Height.......... 244
Instrumentation Arm Positioning.......... 245

CHAPTER 5: CUSPIDOR AND SUPPORT CENTER

CUSPIDOR 248

Product Overview 248

Flow Diagram 250
- Cuspidor and Support Center 250

Service/Usage Information 252
- Cuspidor Circuit Board Components 252

Adjustments/Maintenance 254
- Cup Fill Functions 254
- Bowl Rinse Functions 254
- Cup Fill and Bowl Rinse Timing 255

Illustrated Parts Breakdown 257
- Part Identification 257
- Cuspidor Upper Assembly 259
- Cuspidor Lower Assembly 262
- Cuspidor Fill/Rinse Manifold 264

AMALGAM SEPARATOR HOUSING 265

Components 265

CHAPTER 6: FLOOR BOX

Product Overview 270
- Air and Water Manual Shutoff Valves 270
- Gauge and Pre-Regulator 270

Service/Maintenance 271
- Filter Element 271

Illustrated Parts Breakdown 273
- Part Identification Symbols 273
- Floor Box 274
- Air and Water Filter Regulators 276
- Air and Water Filter Regulators Body Assembly 277
- Moisture Separator 278

CHAPTER 7: SUPPORT SIDE FEATURES

Product Overview 280
- Components 280
- Limit Switch Operation 281

Flow Diagram 282
- Support Side Limit Switch Electrical Diagram 282

Adjustments/Maintenance 283
- Leveling 283

Illustrated Parts Breakdown 287
- Part Identification 287
- Support Link 288
- Limit Switch Components 289
- Lower Support Arm 290

CHAPTER 8: MONITOR MOUNTS

Product Overview 292
- Monitor Mount Specifications 292
- Components 293

Adjustments 300
Friction Adjustment 300
Tray Holder Tension Adjustment
(Support Side Monitor Mount, 561) 301
Panning Friction Adjustment
(500 Track Mount Monitor) 302

Illustrated Parts Breakdown.....................................303
Part Identification 303
Front Mount Monitor Mount (531) 304
Support Side Monitor Mount (561) 307
Support Side Monitor (561) Tray Holder 310
A-dec 500 Track Monitor Mount 312
A-dec 500 Track Monitor Mount Components............... 315
A-dec 500 Track Monitor Mount Trolley Assembly
(Before February 2007)........................... 318
A-dec 500 Track Monitor Mount Trolley Assembly
(After February 2007) 320

CHAPTER 9: DENTAL LIGHTS

Product Overview..324
Dental Light Specifications 324
On/Off Functions 325
Intensity Switches 325

Service/Usage Information 326
Identifying Switch Connections 326
Circuit Breakers 330
Power Cable 331
Transformers 332
Circuit Board Components 334

Adjustments/Maintenance 339
Focus 339
Light Head Rotation 340
Flexarm 343
Light Shield Cleaning 344
Lamp Replacement 345

Illustrated Parts Breakdown 347
Part Identification Symbols...................................347
Light Head 348
571 Dental Light 350
6300 Track Dental Light 352
Trolley Assembly 354
6300 Ceiling Mount Dental Light (Upper)...................356
6300 Ceiling Mount Dental Light (Lower)....................358
6300 Preference Mount Dental Light 360
6300 Wall Mount Dental Light 363

CHAPTER 10: CLINICAL PRODUCTS

EA-50LT AND EA-51LT ELECTRIC MICROMOTOR. 368

Flow Diagram 368

Maintenance 370
EA-50LT and EA-51LT O-ring Replacement 370
EA-50LT and EA-51LT Bushing Replacement.................371
EA-50LT Bulb Replacement 372
EA-51LT Bulb Replacement 373

A-DEC INTRAORAL CAMERA (OCTOBER 2003- JANUARY 2007) 374

Flow Diagram 374

SOPRO INTRAORAL CAMERA (717 & 595)......... 376

Flow Diagram 376

SP NEWTRON SCALER 378

Flow Diagram 378
SP Newtron Scaler with Deluxe Touchpad 378
SP Newtron Scaler with Standard or No Touchpad 380

MINILED CURING LIGHT 382

Flow Diagram 382

CHAPTER 11: ICV

Product Overview...386
Vacuum Requirements 387
ICV Tubing and Cables 388
ICV Display Panel 389
Flow Chart 390

Flow Diagram 391

Service/Usage Information 392
ICV Control Circuit Board 392
ICV Display Circuit Board 393

Adjustments/Maintenance 394
Cycle Time Test 394
Cycle Time Adjustment 394

Illustrated Parts Breakdown 395
Part Identification Symbols 395
ICV Components 396
ICV Display Panel 398
ICV Dual Panel 400

CHAPTER 12: TROUBLESHOOTING

Introduction 404

Dental Chair 405

Delivery Systems 413

Data Communication System.................................... 424

Cuspidor 428

Floor Box 435

Dental Light.. 436

Clinical Products.. 438
Warm Water Syringes 438
Tooth Dryer 440
A-dec Intraoral Camera 441
Sopro Intraoral Cameras (717 and 595).....................442
SP Newtron...444
MiniLED 446
EA-50/51LT Electric Micromotor 447

ICV 448

1

INTRODUCTION

Welcome to the *A-dec 500 Service Guide*. This guide provides a complete review of:

- A-dec 511 chair
- A-dec 500 delivery systems
- Programming
- Cuspidor
- Floor box
- Support side features
- Monitor mounts
- Dental lights
- Clinical products

This guide is intended for newly trained and seasoned service technicians responsible for installing and maintaining A-dec products. The technician should understand the operation of dental equipment, how to use flow diagrams and how to perform basic maintenance on dental or medical equipment.

INSIDE THIS GUIDE

Inside this guide you will find the tools, maintenance, adjustments and troubleshooting information for servicing A-dec 500 products.

This guide contains:

- Adjustments and maintenance information
- Flow diagrams for routing tubing and wiring
- Step-by-step instructions for troubleshooting
- Part number information on serviceable/saleable parts, and non-saleable parts
- Exploded illustrated parts breakdown of assemblies, showing sequence of assembly

Document Conventions

A number of items and instructions appear throughout this document. The information contained within these pages uses special formatting, note styles and symbols to help identify important instructions or component status.

Formatting Conventions

The formatting conventions are designed to make information quick and easy to find and understand.

- *Italic* type indicates document names and to indicate emphasis.
- **Bold** type indicates new terms or glossary terms, and is used for section headings

.

WARNING Warnings indicate potential loss of life or limb.

CAUTION Cautions indicate potential equipment damage.

NOTE Notes indicate additional information.

Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

GETTING SUPPORT

Customer Service

For questions not addressed in this document, contact A-dec Customer Service using contact information for your region.

U.S. and Canada

A-dec Inc.
2601 Crestview Drive
Newberg, OR 97132 USA
Tel: 1.800.547.1883 within US and Canada
Tel: 1.503.538.7478 outside US and Canada
www.a-dec.com
www.a-dec.biz

International

(For United Kingdom and Australia see those regions)

A-dec International Inc.
2601 Crestview Drive
Newberg, OR 97132 USA
Tel: 1.503.538.7478
www.a-dec.com
www.a-dec.biz

United Kingdom

A-dec United Kingdom
Austin House, 11 Liberty Way
Nuneaton, Warwickshire CV11 6RZ
England
Tel: 0800 ADECUK (233285) within UK
Tel: 44 24 7635 0901 outside UK
www.a-dec.co.uk

Australia

A-dec Australia
Unit 8, 5-9 Ricketty St.
Mascot, NSW 2020
Australia
Tel: (02) 8332 4000
1.800.225.010
www.a-dec.com.au

Web Contact

OrderNet/Partner Resources websites: www.a-dec.biz

OTHER SOURCES OF INFORMATION

There are a number of other related documents in the A-dec documentation set. These documents cover a wide range of reference information.

Genuine A-dec Parts Catalog

The *Genuine A-dec Parts Catalog,* P/N 85.5000.00, provides part number and ordering information for A-dec serviceable parts. This catalog details service parts for current products and products which are no longer manufactured, but still in use. Refer to this catalog for additional details on parts found in the service guide addendum.

A-dec Dental Furniture Technical Packet

The *A-dec Dental Furniture Technical Packet,* P/N 86.0142.00, contains information specifically related to dental furniture. The content is intended to assist you in specifying plumbing, utilities, framing and construction requirements for installation of dental furniture.

A-dec Illustrated Parts Breakdown

The *A-dec Illustrated Parts Breakdown* (IPB), P/N 85.0851.00, contains illustrated, exploded views of assemblies with part numbers and descriptions for associated parts for products produced before A-dec 500.

Electronic Documentation

Electronic versions (PDF files) of our documentation (installation instructions, service guides, technical information) can be viewed or downloaded from the *Partner Resources* section of the A-dec website (www.a-dec.biz). Check this location for current detail on products and technical information.

OrderNet

OrderNet is a simple, convenient online ordering system that is available 24 hours. Use OrderNet to place quick orders for service parts or use to configure product and prepare proposals. Order acknowledgments are emailed as soon as you place your order.

SERIAL AND MODEL NUMBERS

Product serial and model number information can be found on the serial/model number labels. When you contact customer service, the serial number helps identify the product and when it was manufactured.

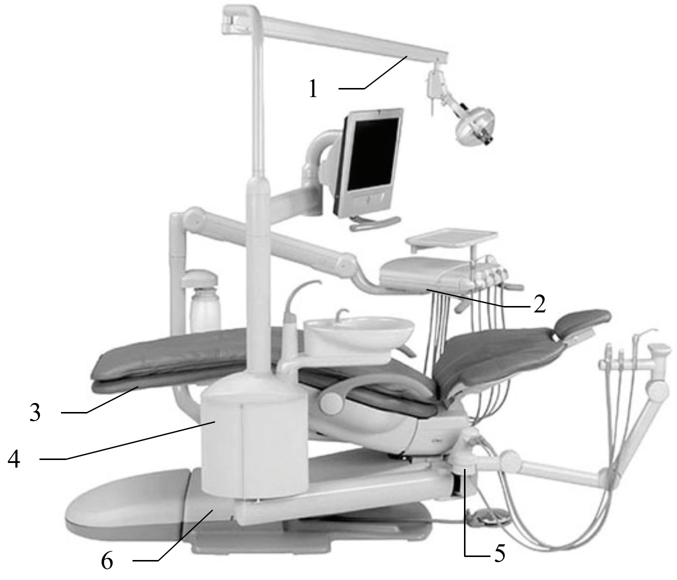
A-dec 500

A-dec 500 serial and model number information can be found on serial/model number labels.

Item	Description
1	Light, underside of the flexarm
2	Delivery system, underside of the delivery system
3	Chair, chair upper structure frame, under the toeboard
4	Cuspidor, inside support center
5	Assistant's instrumentation, underside of the assistant's arm
6	Power supply, inside motor pump area

Track light - on back of circuit breaker cover; *wall-mounted* - on top of circuit breaker cover or at the very base of the post on the transformer side; *Preference-mounted* - on the transformer cover underneath the x-ray cap or at the end of the post by the transformer; *ceiling-mounted* - on top of circuit breaker cover.

Figure 1 Serial/Model Number Locations on A-dec 500



Reading Serial Number Labels

Use the tables shown and Figure 4 to reference how to identify serial/model number information. The **REF:** number is the model number. The **S/N:** is the serial number.

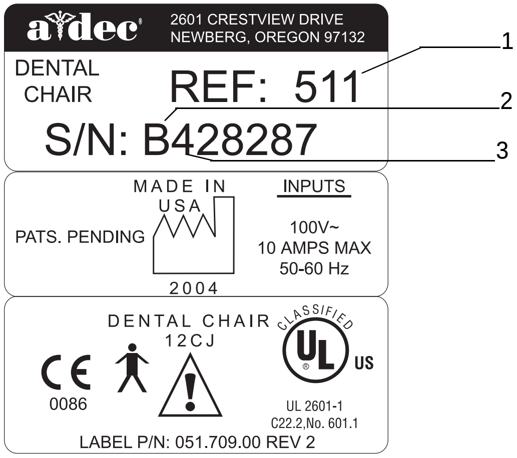
The first letter of the serial number is the month the product was manufactured (see Table 1). The first digit following the letter is the year the product was manufactured.

Table 1 **Month Identification Table**

Letter	Month	Letter	Month
A	January	G	July
B	February	H	August
C	March	I	September
D	April	J	October
E	May	K	November
F	June	L	December

Item	Description
1	Model number of the product
2	Month code (see Table 1)
3	Year the product was manufactured

Figure 2 **Serial Number Label (511 chair)**

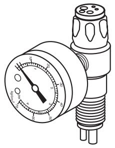
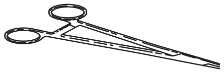
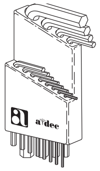
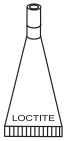
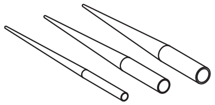

a-dec
2601 CRESTVIEW DRIVE
NEWBERG, OREGON 97132
DENTAL CHAIR
REF: 511
S/N: B428287
1
2
3
MADE IN USA
INPUTS
PATS. PENDING
100V~
10 AMPS MAX
50-60 Hz
2004
DENTAL CHAIR
12CJ
CLASSIFIED
UL
US
CE
0086
UL 2601-1
C22.2,No. 601.1
LABEL P/N: 051.709.00 REV 2

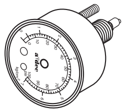
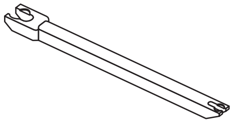
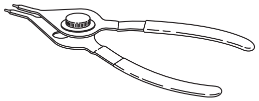
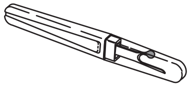
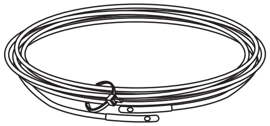
SERVICE TOOLS

Recommended Tools

Table 2 lists the types of tools available from A-dec for servicing A-dec equipment and their recommended use:

Table 2 **Recommended Tools**

Tool	Task	Part Illustration	Part Number
Drive air pressure gauge	Adjusting handpiece drive air pressure, 0-60 psi (4.13 bar). This gauge does not fit the Borden 3-hole coupler		50.0271.00
Hemostat	Troubleshooting or repairing a unit to stop air or water flow through tubing		009.008.00
Hex hey set	Servicing or installing A-dec equipment (plastic case included)		009.018.00
Loctite®	Installing threaded fasteners to prevent loosening		060.001.00 (Red 271) 060.002.00 (Blue 242)
O-ring tools	Replacing O-rings during quick field repairs (fits the four smallest O-ring sizes)		009.013.00

Tool	Task	Part Illustration	Part Number
Panel mount gauge	Checking air/water pressure Can also be used as an inline pressure gauge for testing purposes		026.118.00
Silicone lubricant	Lubrication of internal moving parts such as O-rings, oral evacuator valves, and bushings		98.0090.01
Sleeve tool	Aid in securing 1/4" tubing sleeves and 1/8" uni-clamps		98.0072.00
Snap ring tool	Installation and removal of internal and external snap rings (fits all snap rings used in A-dec equipment)		009.007.00
Tubing stripper	Separation of the extruded air and water lines in vinyl tubing		009.035.00
Umbilical stringer	Route additional tubing or wiring through existing umbilical assemblies (12’ [3.66 mm] stringer with threading holes on both ends)		009.015.00
Valve test syringe	Quick tests of pilot operated valves; used to apply a static pressure of 5-75 psi (.34-5.17 bar)		98.0050.01

2

DENTAL CHAIR

This section provides information related to servicing, maintenance, and adjustments. Detail on how to service the chair and troubleshoot specific problems is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

CHAIR CONTENTS

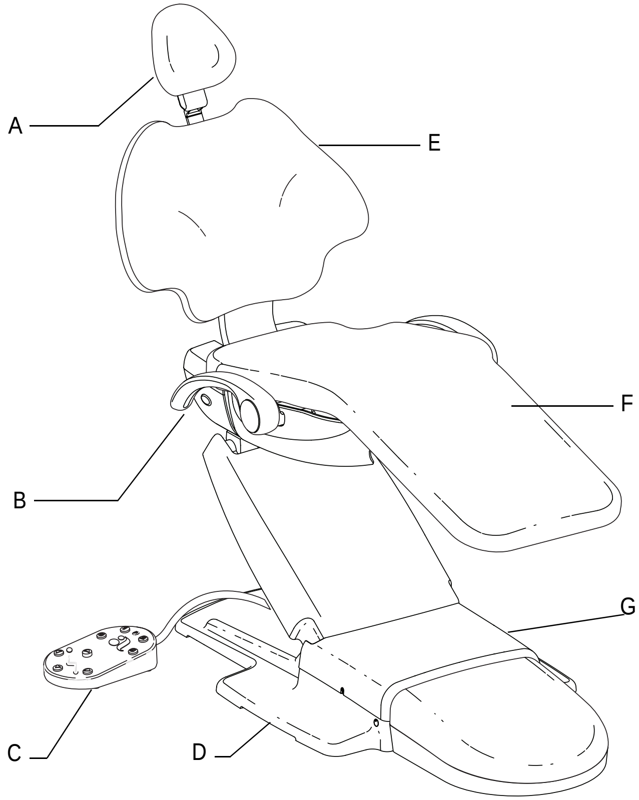
- **Product Overview, page 10**
- **Flow Diagram, page 14**
- **Service/Usage Information, page 16**
- **Adjustments, page 27**
- **Illustrated Parts Breakdown, page 29**

PRODUCT OVERVIEW

A-dec 511 Chair

The A-dec 511 chair provides a range of movements to position the patient for dental treatment. The dental chair consists of a stable base, an ergonomically synchronized seat and back support, adjustable head support, and collapsible arm support. A footswitch and/or touchpad(s) control the chair movement. A hydraulic system and four programmable positions deliver entry, treatment, and exit positioning. The deluxe touchpad option provides two operators with four more programmable positions for a total of eight.

Figure 1 **A-dec 511 Chair Features**



(A) Headrest; (B) Armrest; (C) Foot Switch; (D) Baseplate; (E) Back; (F) Seat; (G) Hydraulic Motor Pump Assembly

A-dec 511 Chair Specifications

Load Capacity

Patient Load: 300 lb. (135 kg) maximum

Accessory Load: 250 lb. (113 kg) maximum

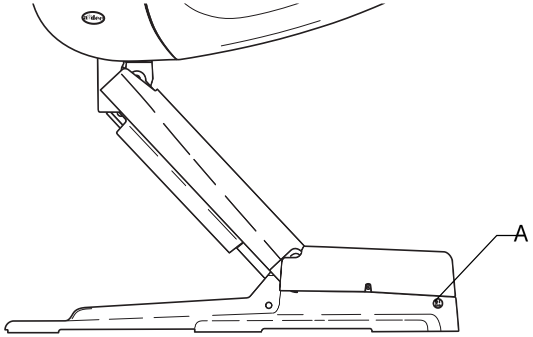
Specifications are subject to change without notice.

NOTE Ensure the chair is bolted to the floor after installation.

Power On/Off Button

The power On/Off button is located on the base of the chair, and is the main disconnect that completely shuts down the electrical systems. When the button is pressed in, power is on. When the button is out, power is off.

Figure 2 **On/Off Button**



(A) On/Off Button

Limp-Along Feature

If there is a problem or malfunction, the limp-along feature allows the operator to move the chair in the up direction for one second intervals by pushing the manual control buttons on the touchpad or footswitch.

Chair Power Supply

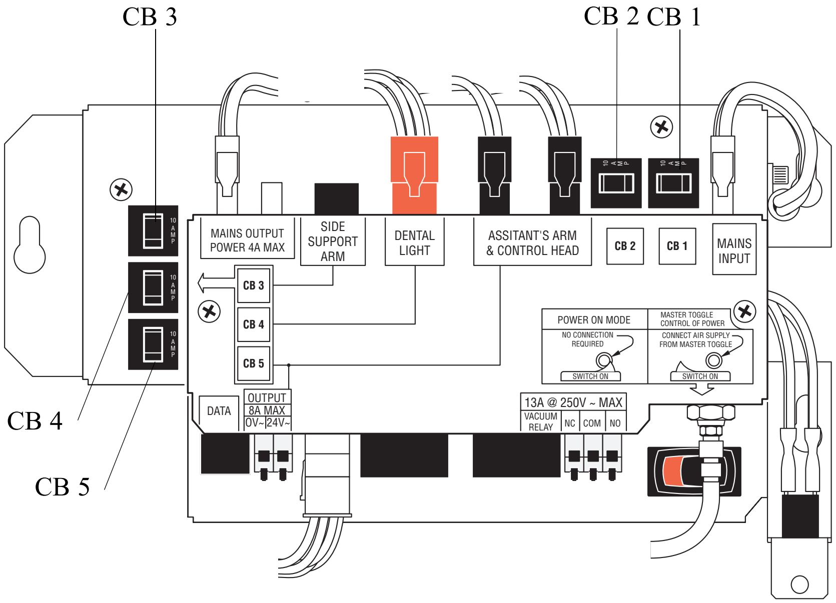
The 300-watt power supply comes standard with the A-dec 511 chair. It is located in the motor pump area of the chair. The total available auxiliary load is a maximum of 4 Amps.

NOTE The electric switch connects the power supply to pilot air.

Table 3 Power Supply Circuit Breaker Function

Circuit Breaker	Function
CB 1	Mains
CB 2	Mains
CB 3	Support side arm (side support arm)
CB 4	Assistant's arm, control head (delivery system) and chair circuit board.
CB 5	Dental light

Figure 3 Chair Power Supply Circuit Breaker Identification

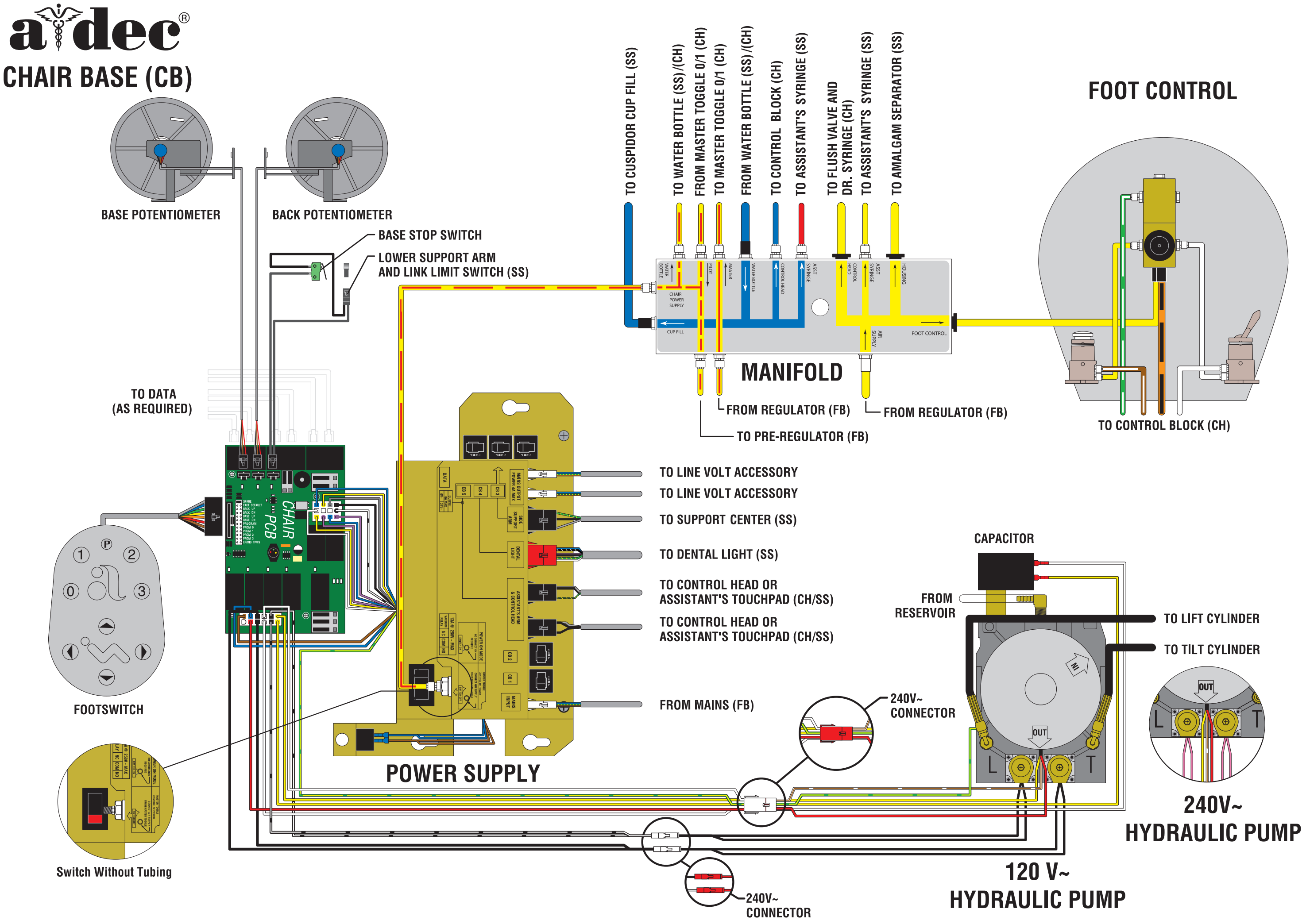

CB 3
CB 2
CB 1
CB 4
CB 5
10 AMP
MAINS OUTPUT POWER 4A MAX
SIDE SUPPORT ARM
DENTAL LIGHT
ASSITANT'S ARM & CONTROL HEAD
CB 2
CB 1
MAINS INPUT
CB 3
CB 4
CB 5
POWER ON MODE
NO CONNECTION REQUIRED
SWITCH ON
MASTER TOGGLE CONTROL OF POWER
CONNECT AIR SUPPLY FROM MASTER TOGGLE
SWITCH ON
DATA
OUTPUT 8A MAX
0V~ 24V~
13A @ 250V ~ MAX
VACUUM RELAY
NC
COM
NO

FLOW DIAGRAM

Chair Flow Diagram

This flow diagram details both electrical and plumbing information for servicing and troubleshooting the A-dec 511 chair. The flow diagram is located on the inside of the motor pump cover. This diagram includes the air electric switch, motor pump connections, and potentiometers.

Figure 4 Chair Flow Diagram


CHAIR BASE (CB)
BASE POTENTIOMETER
BACK POTENTIOMETER
BASE STOP SWITCH
LOWER SUPPORT ARM
AND LINK LIMIT SWITCH (SS)
TO DATA
(AS REQUIRED)
CHAIR PCB
FOOTSWITCH
Switch Without Tubing
POWER SUPPLY
TO CUSPIDOR CUP FILL (SS)
TO WATER BOTTLE (SS)/(CH)
FROM MASTER TOGGLE 0/1 (CH)
TO MASTER TOGGLE 0/1 (CH)
FROM WATER BOTTLE (SS)/(CH)
TO CONTROL BLOCK (CH)
TO ASSISTANT'S SYRINGE (SS)
TO FLUSH VALVE AND
DR. SYRINGE (CH)
TO ASSISTANT'S SYRINGE (SS)
TO AMALGAM SEPARATOR (SS)
MANIFOLD
FROM REGULATOR (FB)
TO PRE-REGULATOR (FB)
FROM REGULATOR (FB)
FOOT CONTROL
TO CONTROL BLOCK (CH)
TO LINE VOLT ACCESSORY
TO LINE VOLT ACCESSORY
TO SUPPORT CENTER (SS)
TO DENTAL LIGHT (SS)
TO CONTROL HEAD OR
ASSISTANT'S TOUCHPAD (CH/SS)
TO CONTROL HEAD OR
ASSISTANT'S TOUCHPAD (CH/SS)
FROM MAINS (FB)
CAPACITOR
FROM
RESERVOIR
TO LIFT CYLINDER
TO TILT CYLINDER
240V~
CONNECTOR
OUT
L
T
240V~
HYDRAULIC PUMP
120 V~
HYDRAULIC PUMP
240V~
CONNECTOR

SERVICE/USAGE INFORMATION

Chair Covers

The A-dec 511 chair motor pump, lift arm and stop plate covers are removed in the following order:

1. Motor Pump Cover

- To remove: Remove screw from each side and lift up.
- To replace: Replace cover, and attach with two screws.

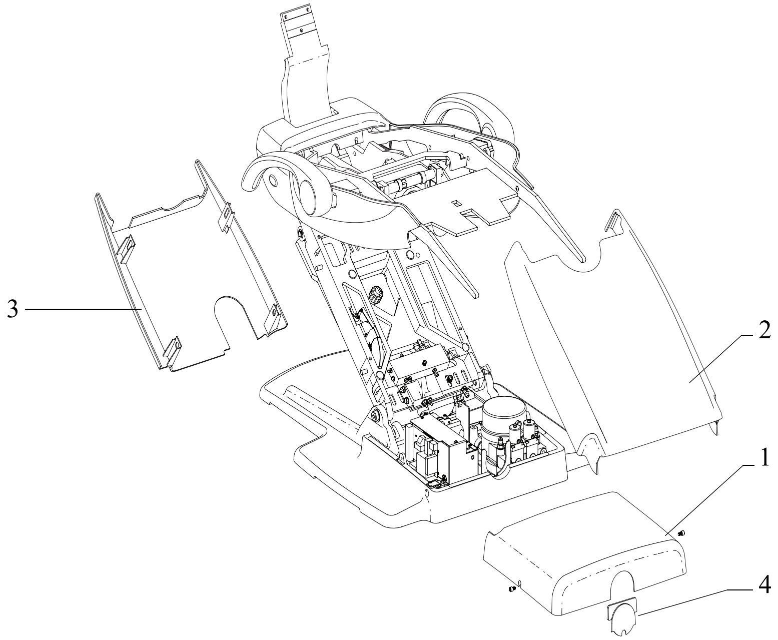
2. Lift Arm Cover

- To remove: Pull one side of the cover until it releases from the lift arm.
- To replace: Align one side of the cover with the lift arm and snap into place. Ensure both sides are firmly attached.

3. Stop Plate

- To remove: Pull one side of the cover until it releases from the lift arm.
- To replace: Slide one side of the cover over the post on the lift arm and attach.

Figure 5 **A-dec 511 Chair Covers**



Item	Part Number	Description
1	62.0080.00	Motor pump cover
2	62.0081.00	Lift arm cover
3	62.0084.00	Stop plate cover
4	62.0101.00	Motor pump cover plug

Factory Default Routine

When a new circuit board is installed in the chair, the circuit board needs to run the factory default routine to learn the range of motion of the chair.

The routine:

- sets the base and back upper limits
- calculates new presets based on actual range of motion of the chair
- verifies that the potentiometers work

To start the factory default routine, place the "spare" jumper in the factory default position on the P3 test points of the chair circuit board.

When running the factory default routine the chair:

1. Moves base down
2. Moves base up
3. Moves back down
4. Moves back up
5. Moves base and back to Position 0
6. Beeps three times

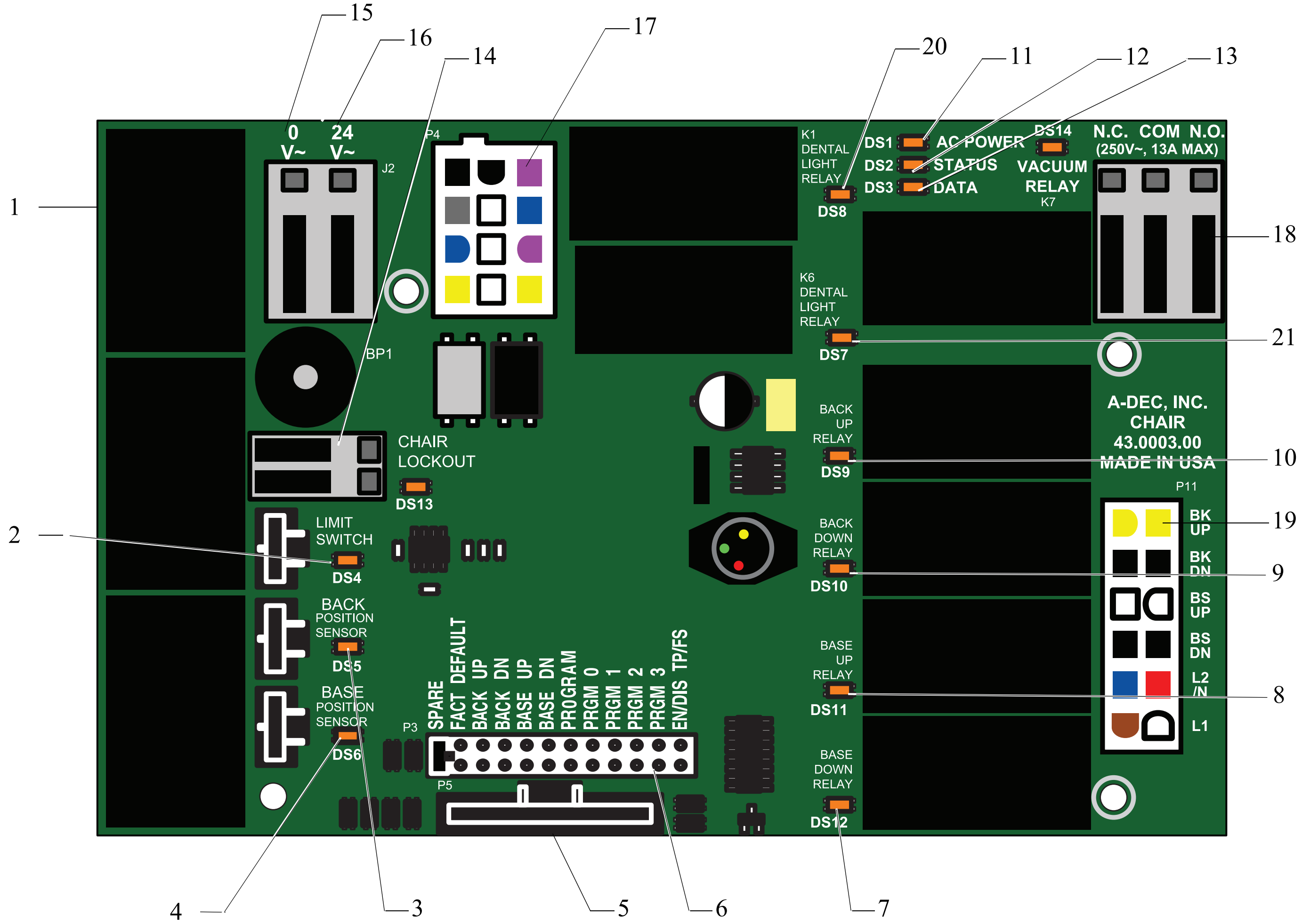
NOTE The jumper must remain in the factory default position to complete the factory default routine. The status LEDs on the standard and deluxe touchpads and the chair circuit board double blink while the factory default routine is running and after the routine is complete.

Chair Circuit Board Components

Part No: 90.1072.00

Item	Description
1	P7, P8, P9 - Data line ports
2	DS4 - Stop switch LED (limit switch) and P10 connector
3	DS5 - Back potentiometer LED and P1 connector
4	DS6 - Base potentiometer LED and P2 connector
5	P5 - Footswitch connector
6	P3 - Test points
7	DS12 - Base down LED and relay K5
8	DS11 - Base up LED and relay K4
9	DS10 - Back down LED and relay K3
10	DS9 - Back up LED and relay K2
11	DS1 - AC power LED
12	DS2 - Status LED
13	DS3 - Data LED
14	DS13 - Chair lockout LED and terminal strip J1
15	J2 - Ø VAC terminal strip (output)
16	J2 - 24VAC terminal strip (output)
17	P4 - Input power and dental light connector
18	J3 - Vacuum relay K7 and output terminal strip
19	P11 - Pump motor and solenoid connector
20	DS8 - Dental light LED and relay K1
21	DS7 - Dental light LED and relay K6

Figure 6 **A-dec 511 Chair Circuit Board Components**


15
16
14
17
20
11
12
13
1
0 V~
24 V~
J2
P4
K1 DENTAL LIGHT RELAY
DS8
DS1
DS2
DS3
AC POWER
STATUS
DATA
DS14
VACUUM RELAY
K7
N.C. COM N.O.
(250V~, 13A MAX)
18
K6 DENTAL LIGHT RELAY
DS7
21
BP1
CHAIR LOCKOUT
DS13
A-DEC, INC.
CHAIR
43.0003.00
MADE IN USA
10
BACK UP RELAY
DS9
P11
2
LIMIT SWITCH
DS4
BACK DOWN RELAY
DS10
BK UP
BK DN
BS UP
BS DN
L2 /N
L1
19
9
BACK POSITION SENSOR
DS5
BASE POSITION SENSOR
DS6
P3
SPARE
FACT DEFAULT
BACK UP
BACK DN
BASE UP
BASE DN
PROGRAM
PRGM 0
PRGM 1
PRGM 2
PRGM 3
EN/DIS TP/FS
BASE UP RELAY
DS11
8
P5
BASE DOWN RELAY
DS12
4
3
5
6
7

LED Identification

Figure 4 describes the LEDs on the chair circuit board.

Table 4 **LED Identification**

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	Green, steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS Message
DS4 - Chair limit switch	Off	Closed, (normal)
	Red	Open, (activated)
DS13 - Chair lockout	Off	Open, (normal)
	Red	Closed, (activated)
DS5 + DS6 - Chair potentiometers	Off	Potentiometer: • Not connected or bad connection • Moving in wrong direction • Limited range of motion, or • Cable is not on wheel
	Yellow, steady	Normal operation
	Yellow, fast blink	Upper end of travel
DS9, DS10, DS11, DS12 - Chair relay LEDs	Off	Relay is off
	On	Relay is on
DS7, DS8 - Dental light relay LEDs	Off	Relay is off
	On	Relay is on
DS14 - Vacuum relay LED	Off	Relay is off
	On	Relay is on

The Hydraulic System

The hydraulic system deactivates automatically at the upper and lower extremes of travel. The system is leak-free during transportation, storage, and operation. The hydraulic system consists of:

- Hydraulic fluid reservoir
- Hydraulic cylinders
- Motor-driven hydraulic pump with solenoids

Hydraulic Fluid Reservoir

The hydraulic fluid reservoir is located in the lift arm of the chair under the stop plate cover. You can see the fluid level in the reservoir through the sides of the reservoir. A top fill cap allows you to add fluid. The hydraulic system holds 40 ounces (2.5 pints [1.18 l]) of hydraulic fluid.

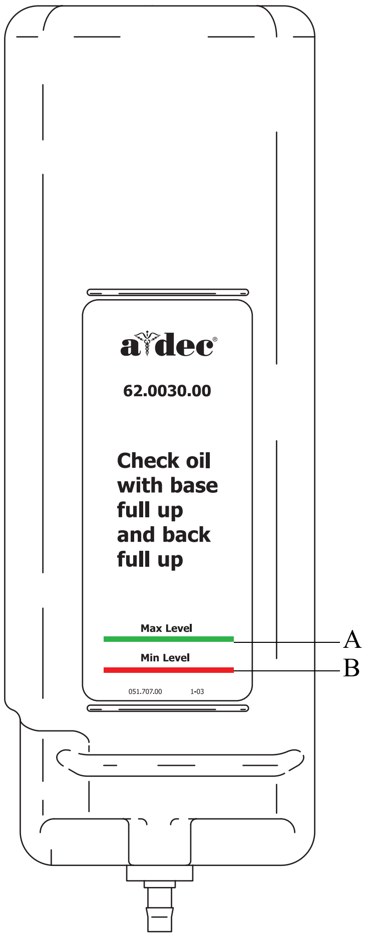
To fill the reservoir:

1. Place the chair in the full base and back up position.
2. Fill to the green Max line (see Figure 7).

CAUTION Do not over fill.

3. Cycle the chair after the reservoir is filled.

Figure 7 Hydraulic Fluid Reservoir



(A) Max Level; (B) Min Level

Hydraulic Cylinders

The hydraulic cylinders operate during the **Base Up** and **Back Up** functions. Springs and gravity retract the piston during **Base Down** and **Back Down** functions.

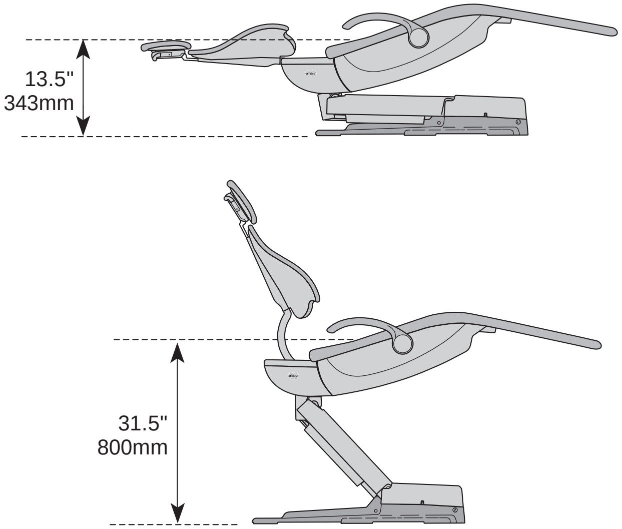
The chair seat travels vertically from a low point of 13.5" (343 mm) to a high point of 31.5" (800 mm) above the floor (see Figure 8).

Motor-driven Hydraulic Pump

The hydraulic pump takes hydraulic fluid from the reservoir and pressurizes it to extend the chair lift and tilt hydraulic cylinders for back and base up functions. The bi-directional pump rotates one direction for **Base Up** and the opposite direction for **Back Up**. The solenoids mounted to the pump assembly gate hydraulic fluid from the two cylinders. Depending on the chair **Down** function, the controller selects which solenoid-actuated manifold valves are open or closed. The 100-120 VAC pump and 220-240 VAC pump are equipped with an automatic reset 110°C (230°F) thermal limiter. There are no serviceable parts on the hydraulic pump other than the solenoids.

NOTE You can not adjust the speed of the chair.

Figure 8 **Hydraulic Cylinder Operation**

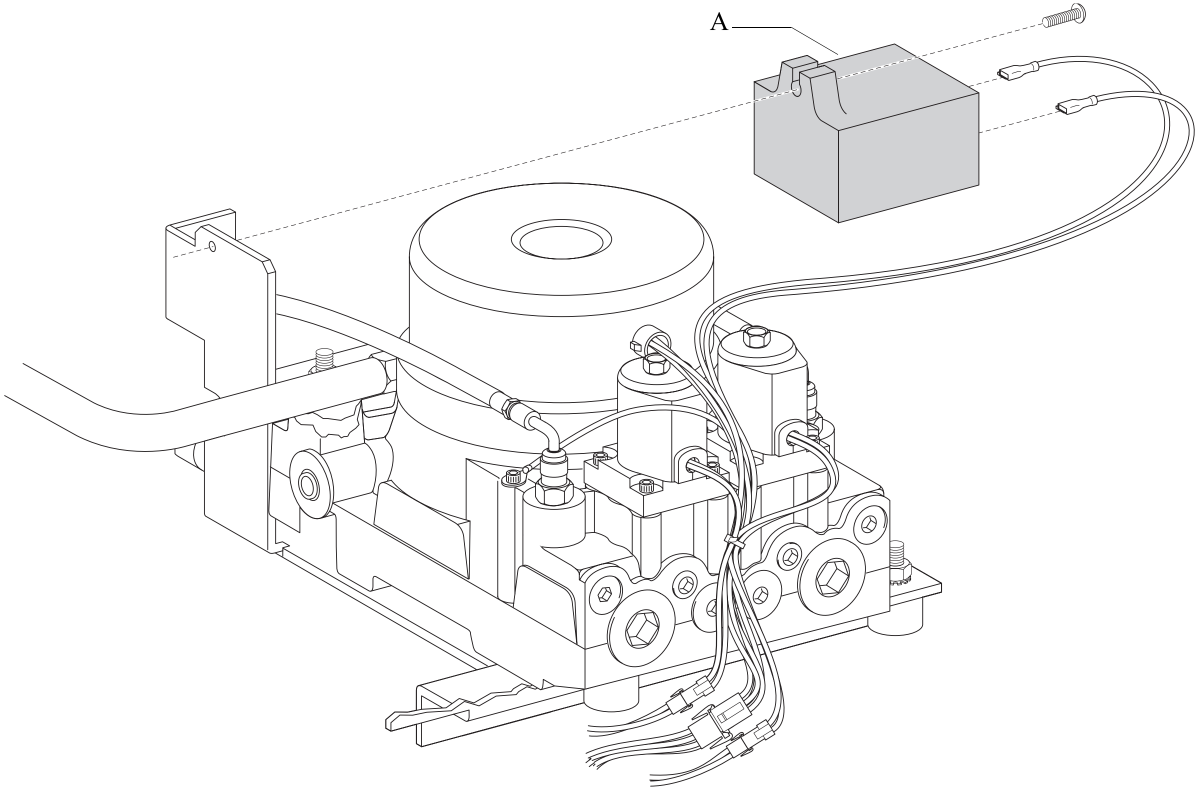


Capacitor

Part No: 041.642.00, 100 VAC
Part No: 041.643.00, 110 - 120 VAC
Part No: 041.644.00, 220 - 240 VAC

The capacitor is energized during chair **Base Up** or **Back Up** functions.

Figure 9 **A-dec 511 Chair Capacitor**



(A) Capacitor

Solenoids

Part No: 90.1070.00, 110 - 120 VAC
Part No: 90.1071.00, 220 - 240 VAC

How to Test Solenoids

A solenoid is entergized during **Base Down** and **Back Down** functions. To check for a failed solenoid, test the solenoids using a volt/ohm meter or magnetic pull test:

- **Magnetic pull**

1. Hold a paper clip loosely in your hand.
2. Activate the solenoid by pressing **Base Down** or **Back Down** on the footswitch or touchpad.
3. If there is a pull on the paper clip, the solenoid is being entergized.

- **Coil resistance**

1. Disconnect the solenoid power at the 2-position connector.
2. Place on Ohm meter probe on each of the solenoid connector terminals.
   100 - 120 VAC = 177 Ohms ± 18 Ohms
   220 - 240 VAC = 845 Ohms ± 85 Ohms

NOTE If the solenoid is hot, then the resistance reads higher.

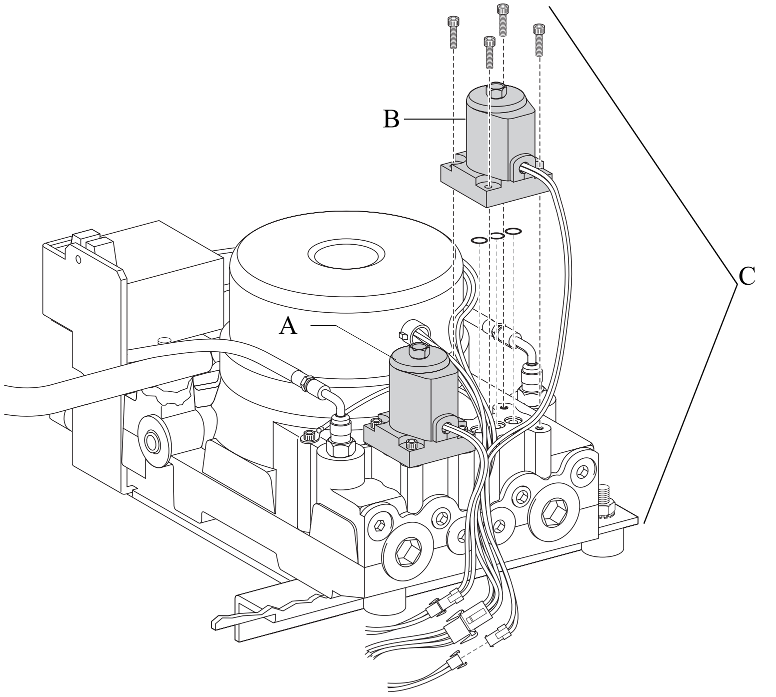
NOTE When replacing a solenoid, wipe up any oil, and replace existing O-rings on the solenoid base.

ELECTRICAL WARNING The solenoid coils are powered by line voltage (100, 120, or 240 VAC). Failure to unplug the chair may result in serious injury from electrical shock.

WARNING You must depressurize the base or back system prior to removing the solenoid.

1. Depressurize base or back system,
2. Remove the failed solenoid coil
3. Replace with the operating solenoid coil.
4. Lower the chair base and back.

Figure 10 **A-dec 511 Chair Solenoids**

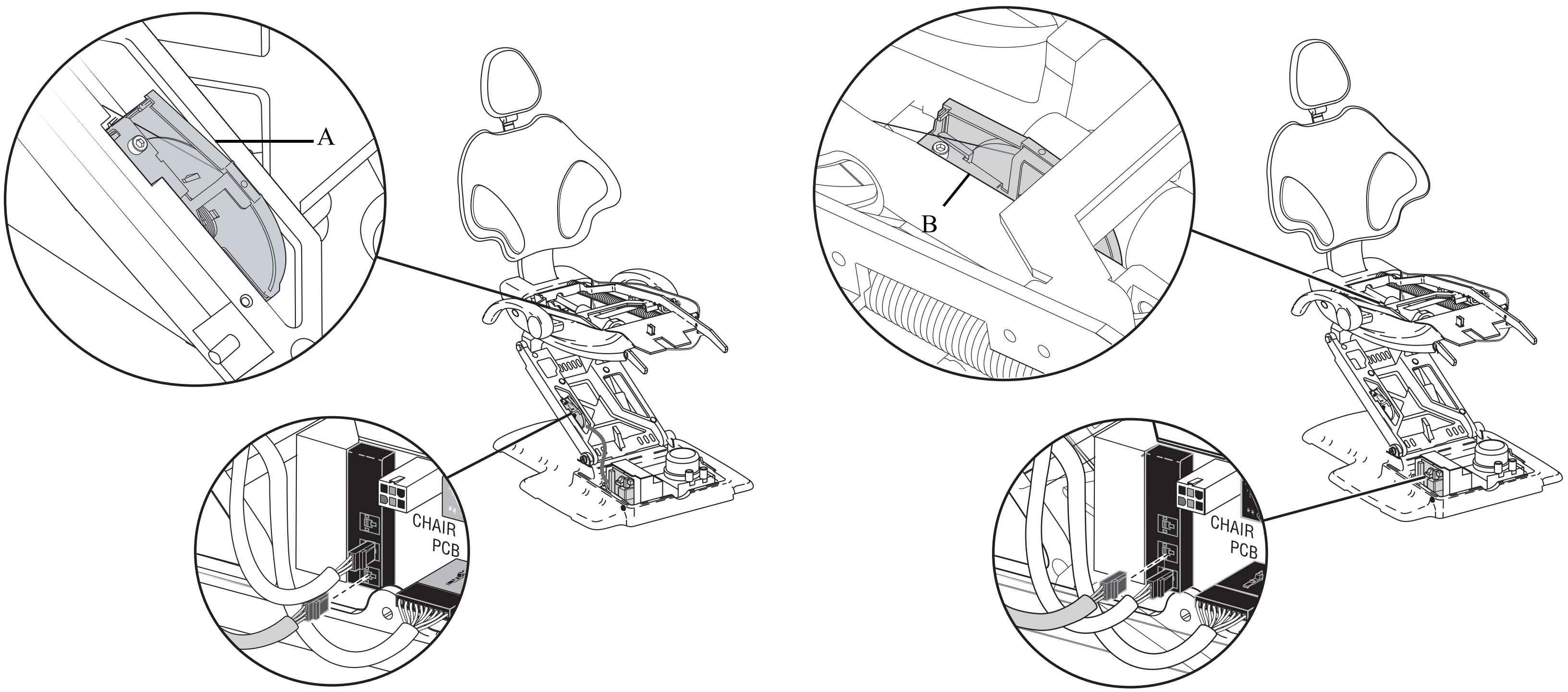


(A) Base Down Solenoid; (B) Back Down Solenoid; (C) Motor Pump Assembly

Potentiometer

The potentiometer and cable assembly is a simple, accurate unit, which eliminates position float. “Float” is a slight change or variation in the pre-programmed positions. The chair uses the same potentiometer assembly for both lift and tilt requirements. If a potentiometer should fail, the limp-along feature allows the operator to position the chair for one second intervals by pushing the manual control buttons on the touchpad or footswitch.

Figure 11 **Location of the Chair Base Up and Back Up Potentiometers**



(A) Base Up Potentiometer; (B) Back Up Potentiometer

Chair Stop Plate

The chair stop switch stops chair movement when you press the stop plate. Should anything inadvertently become lodged under the chair, press **Base Up** on the touchpad or footswitch to raise the chair so you can remove the object. As long as you apply pressure to the stop plate, the chair does not move down.

The stop plate has only one switch. The switch and all other parts snap into place for easy removal or replacement. No tools are required.

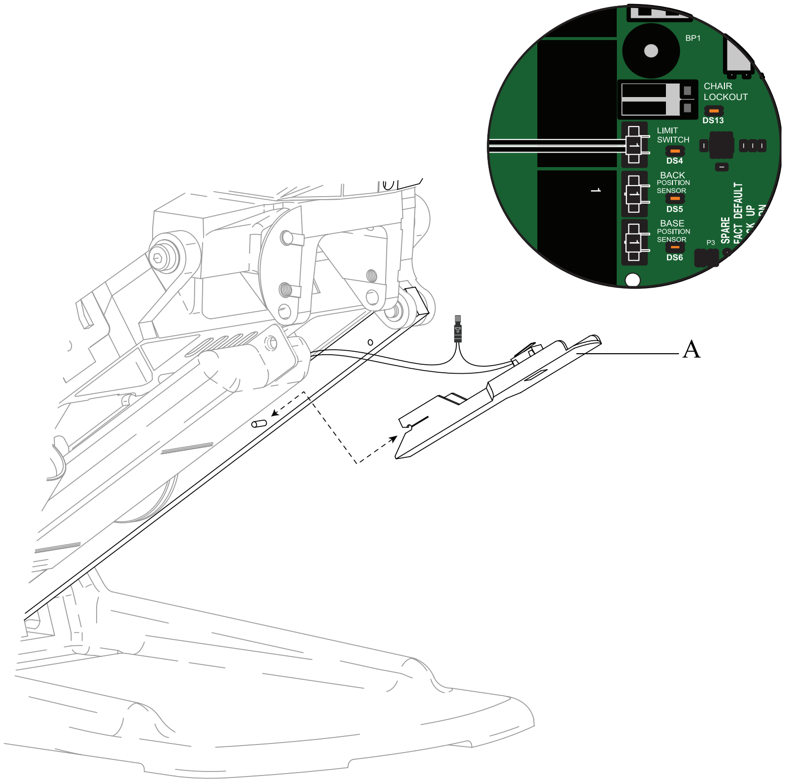
WARNING Be sure to power off the chair and disconnect it from its power source before replacing the stop switch.

CAUTION Cable tie the wires to the lift arm to prevent kinking and pinching.

Chair Bump-Up Feature

The chair stop plate and the assistant's arm trigger the chair to move upwards if it was moving down when the stop plate switch was activated.

Figure 12 A-dec 511 Chair Stop Plate


BP1
CHAIR LOCKOUT
DS13
LIMIT SWITCH
DS4
BACK POSITION SENSOR
DS5
BASE POSITION SENSOR
DS6
P3
SPARE
FACT DEFAULT
UP
A

(A) Stop Switch Assembly

ADJUSTMENTS

Swivel Brake

The chair can rotate to any position within 30° either side of center. The chair swivel brake keeps the chair from moving. To engage the brake, push the brake lever firmly to the left. To release the swivel brake, push the brake lever to the right.

Tension Adjustment

If the chair swivels left or right with the brake engaged or if it is difficult to move with the brake disengaged, adjust the swivel brake tension. To adjust the tension, use a 5/32 hex key and turn the tension adjustment screw;

- Clockwise to increase brake friction
- Counterclockwise to decrease brake friction.

If you cannot obtain proper adjustment through rotation of the hex key, replace the brass brake pad by removing the brake handle and using a hex key to disengage the pad. Remove the old pad and replace with new one. Replace the brake handle and handle retainer.

NOTE To disable the swivel feature, reinstall the shipping pin.

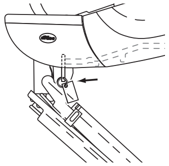


Figure 13 **Chair Swivel**

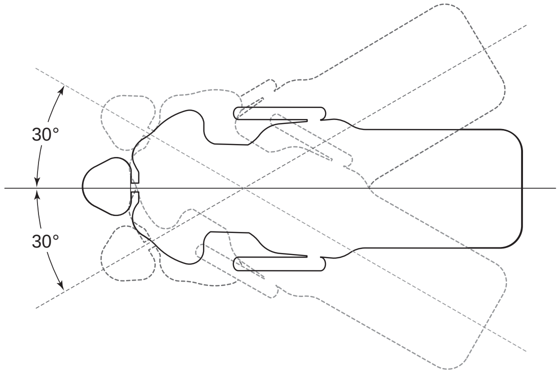
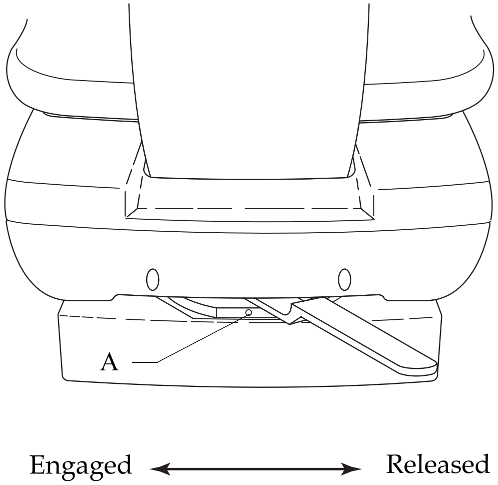


Figure 14 **Swivel BrakeTension Adjustment**



(A) Tension Adjustment Screw

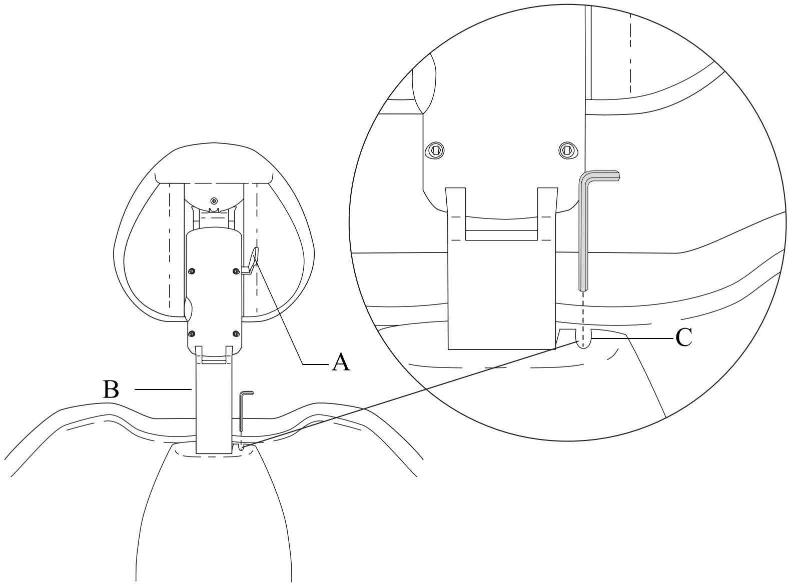
Headrest

The headrest adjustment lever allows you to use one hand to adjust the headrest. When the lever is released, the headrest holds its position.

Drift Adjustment

If the headrest drifts downward, or if it is difficult to move up or down, adjust the glide bar tension. To adjust the tension, use a 1/8 hex key and turn the tension adjustment screw clockwise to increase friction or counterclockwise to decrease friction.

Figure 15 Headrest Adjustments



(A) Headrest Adjustment Lever; (B) Glide Bar;
(C) Glide Bar Tension Adjustment

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the A-dec 511 Chair.

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

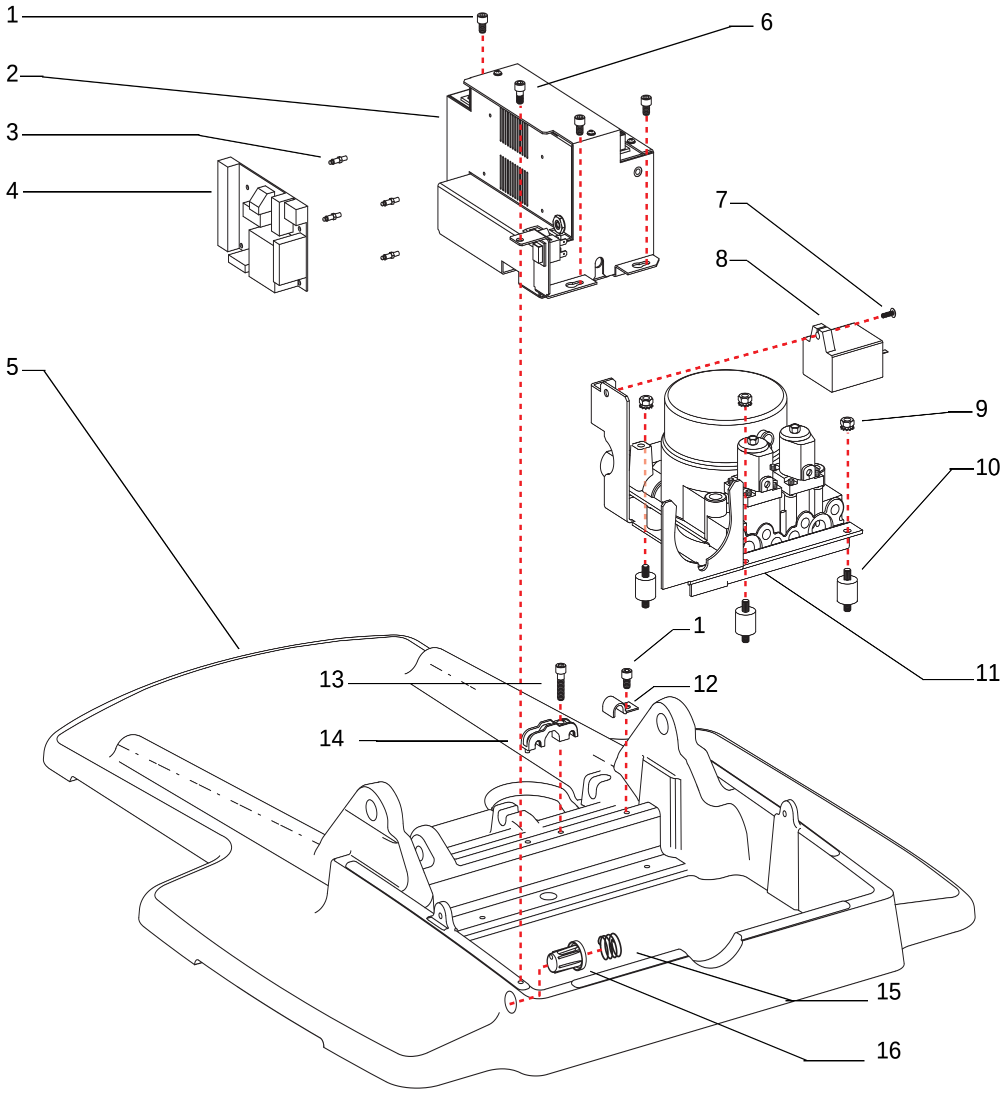
CHAIR IPB CONTENTS

- **Baseplate and Motor Pump Assembly, page 30**
- **Hydraulic Hose and Solenoid Assembly, page 32**
- **Lift Cylinder and Link Arm, page 34**
- **Lower Assembly, page 36**
- **Upper Structure/Swivel Assembly, page 38**
- **Back and Tilt Cylinder Assembly, page 40**
- **Upper (Springs and Cam Assembly), page 42**
- **Upper (Seat Assembly), page 44**
- **Headrest Assembly, page 46**

Baseplate and Motor Pump Assembly

Item	Part Number	Description
1	002.010.00	Screw, socket head, patch, 1/4-20 x 3/8" stainless steel
2	90.1073.00	Power supply, 100V
	90.1074.00	Power supply, 120V
	90.1075.00	Power supply, 240V
3	90.1082.00	Stand-off, package of 5
4	90.1072.00	Chair PCB (includes item #3 stand-offs)
5	62.0029.00†	Baseplate
6	005.008.01	Screw, 1/4-20 x 1/2"
7	001.229.00	Screw, truss head, Phillips, 6-32 x 1/2", stainless steel
8	041.642.00	Capacitor, 100V
	041.643.00	Capacitor, 110-120V
	041.644.00	Capacitor, 220-240V
9	006.141.00	Nut, hex, KEPs 1/4-20
10	037.040.00	Isolator
11	90.1094.00	Hydraulic motor pump assembly, 100V
	90.1094.01	Hydraulic motor pump assembly, 120V
	90.1094.02	Hydraulic motor pump assembly, 240V
12	025.112.00	Clamp, half type
13	002.120.00	Screw, socket head, patch, 1/4-20 x 1" stainless steel
14	62.0131.00	Strain relief
15		Spring - Part of Main On/Off Switch Kit, P/N 90.1068.00
16		Button - Part of Main On/Off Switch Kit, P/N 90.1068.00

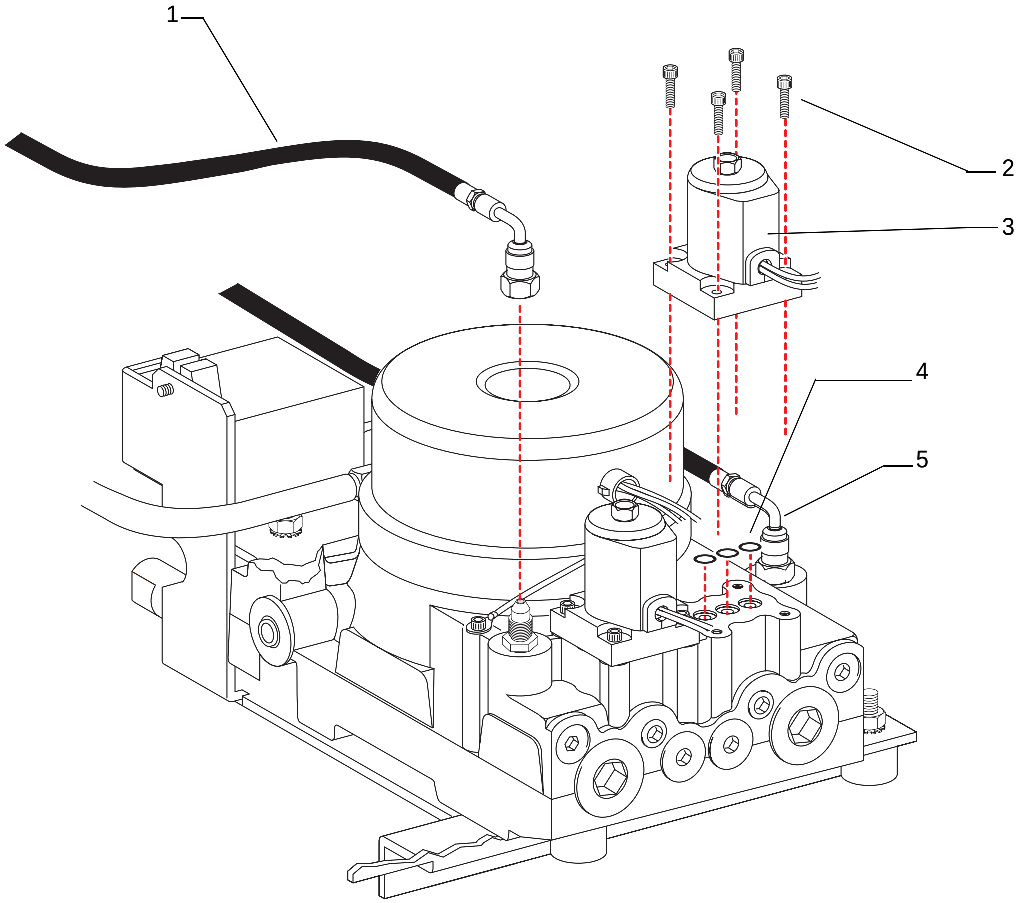
Figure 16 Baseplate and Motor Pump Assembly


1
2
3
4
5
6
7
8
9
10
1
13
12
11
14
15
16

Hydraulic Hose and Solenoid Assembly

Item	Part Number	Description
1	62.0046.00	Hydraulic hose, lift
2	001.250.00	Screw, socket head cap, 8-32 x 5/8", black
3	90.1070.00	Solenoid, 110-120V, kit
	90.1071.00	Solenoid, 220-240V, kit
4	035.055.00†	O-ring, 5.8mm ID x 1.9 W, Buna
5	62.0047.00	Hydraulic hose, tilt

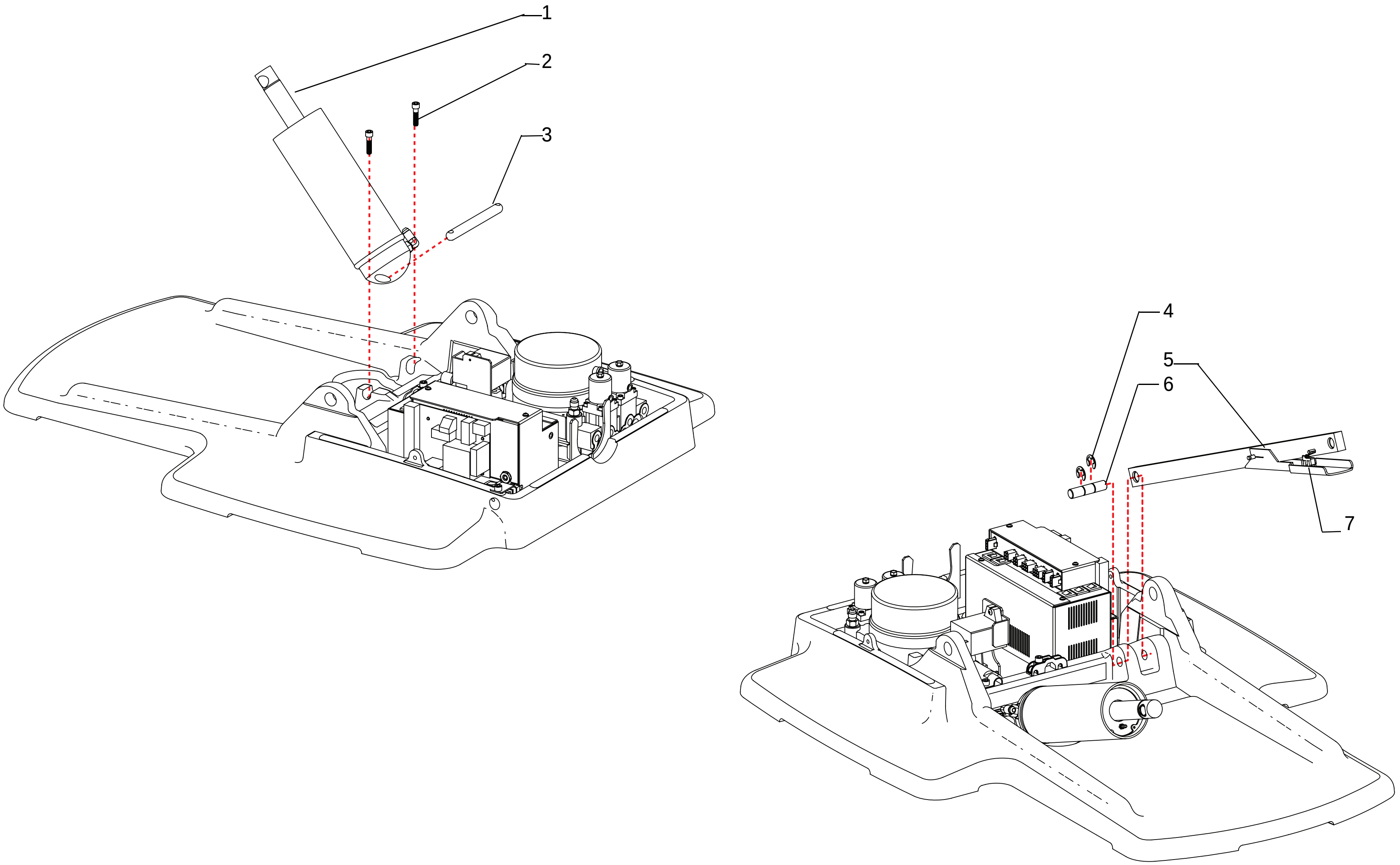
Figure 17 **Solenoid Assembly**



Lift Cylinder and Link Arm

Item	Part Number	Description
1	90.1083.00	Lift cylinder assembly
2	002.120.00	Screw, socket head patch, 1/4-20 x 1" stainless steel
3	62.0135.00	Pin
4	010.031.01	Retaining e-ring, external 1/2" ID, stainless steel
5	62.0078.01	Link arm
6	62.0134.00	Pin, link arm
7	90.1095.00	Kit, Stop switch replacement

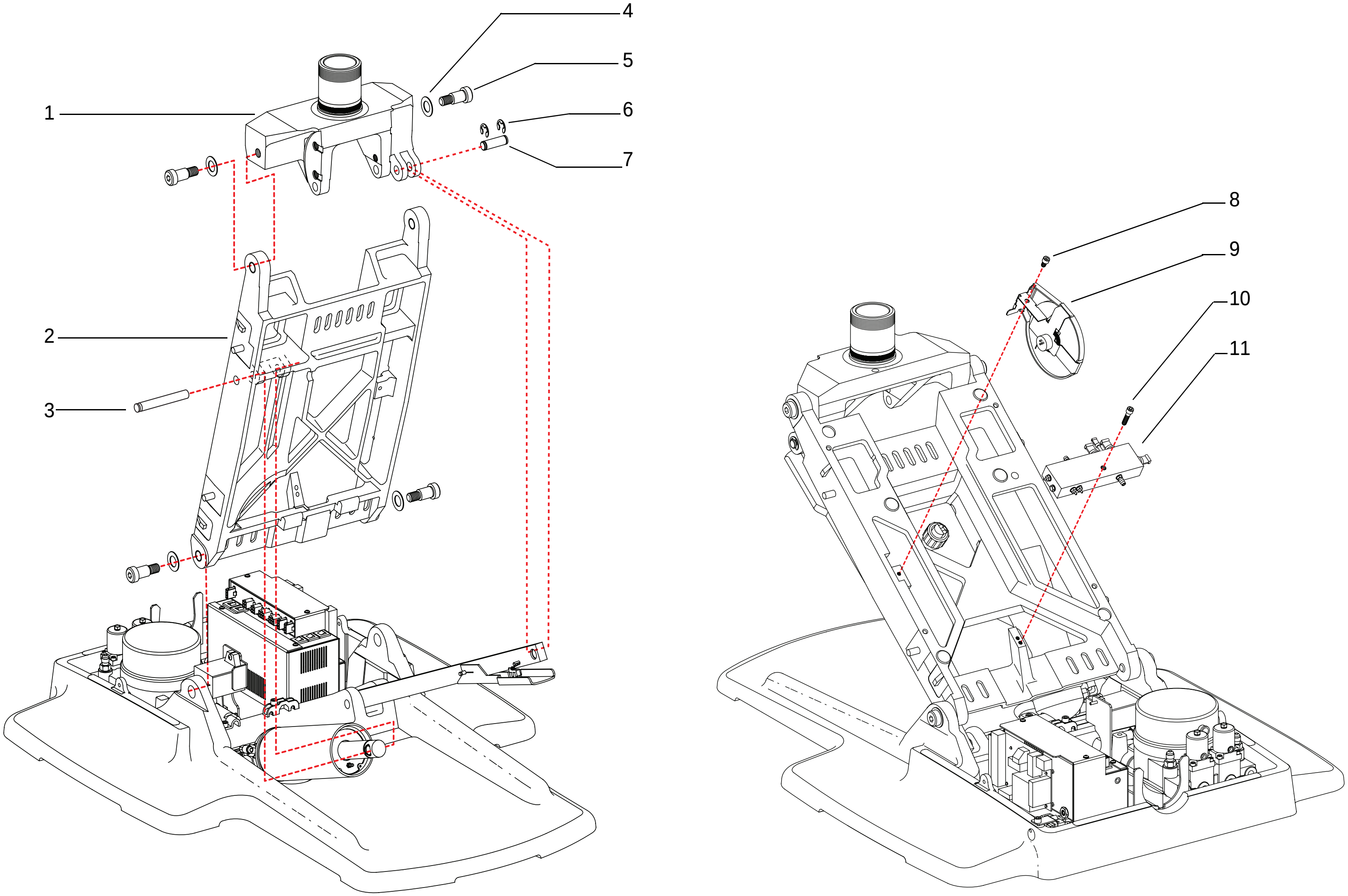
Figure 18 Lift Cylinder and Link Arm



Lower Assembly

Item	Part Number	Description
1	62.0091.00†	Swivel mount
2	62.0089.00†	Liftarm
3	011.124.00†	Pin, clevis
	90.1083.00	Kit, Lift cylinder (includes 1, 2 and 3)
4	004.148.00	Washer, flat nylatron
5	001.165.00	Screw, socket shoulder, 1/2-13 x 5/8 x 7/8
6	010.031.01	Retaining e-ring, external 1/2" ID stainless steel
7	62.0077.00	Pin, linkarm
8	002.010.00	Screw, socket head patch, 1/4-20 x 3/8" stainless steel
9	90.1069.00	Potentiometer
10	005.008.01	Screw, 1/4-20 x 1/2"
11	38.1804.00	Manifold assembly

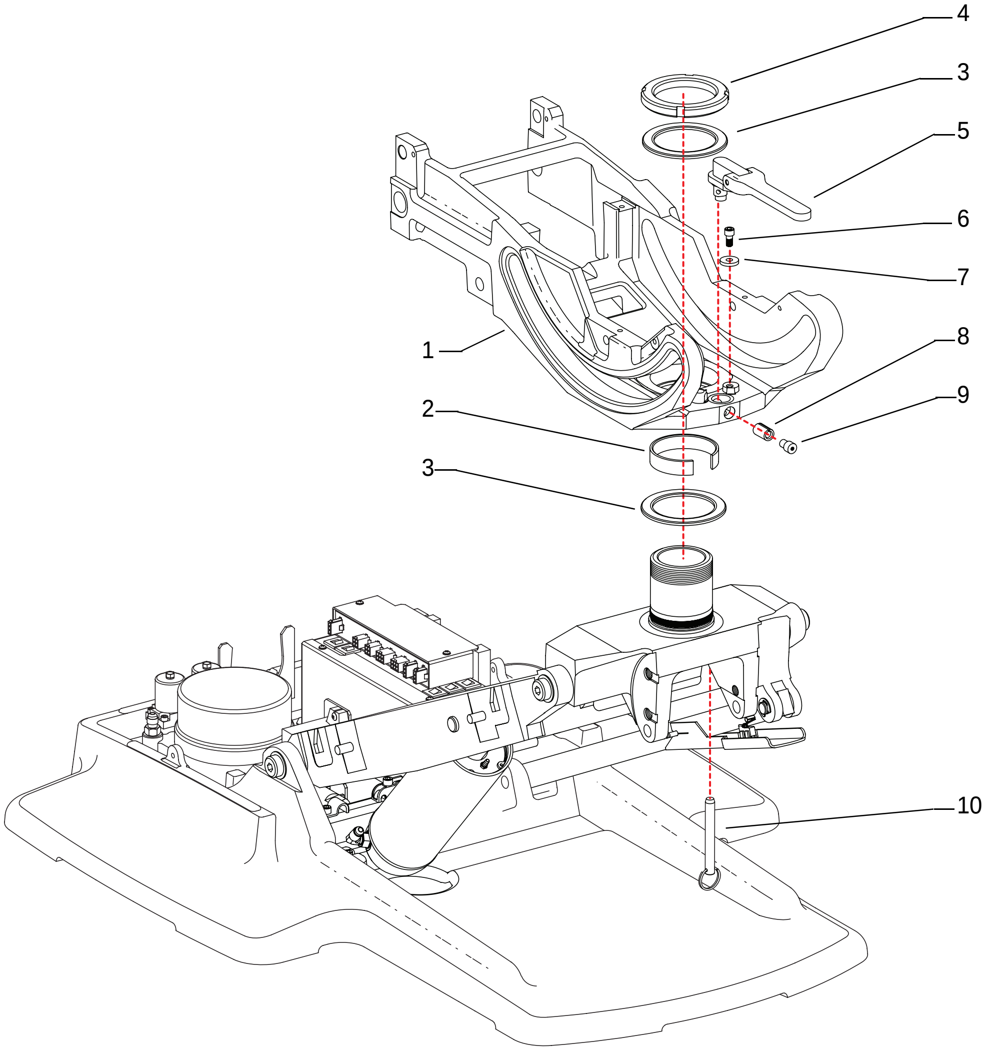
Figure 19 Lower Assembly


1
2
3
4
5
6
7
8
9
10
11

Upper Structure/Swivel Assembly

Item	Part Number	Description
1	62.0050.00†	Upper structure
2	62.0237.00	Wear ring, 2-3/4 OD x 5/8"
3	016.133.00	Thrust bearing
4	61.2051.00	Locknut, spanner
5	62.0218.00	Brake handle assembly
6	005.008.01	Screw, 1/4-20 x 1/2" socket head
7	004.170.00	Washer, flat, nylon
8	62.0042.00	Adjuster, brake
9	62.0043.00	Plunger, brake
10	011.097.00	Ship pin

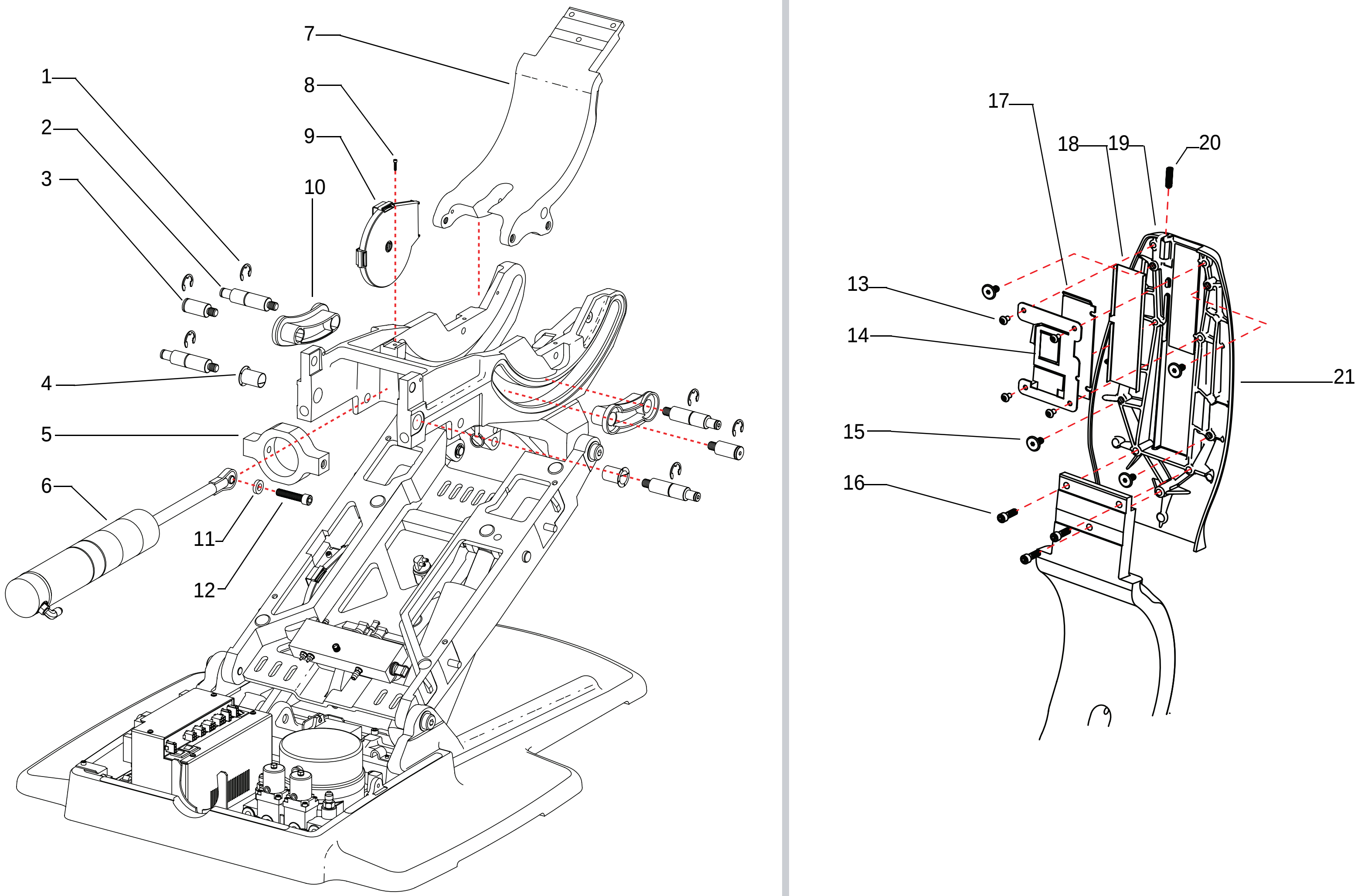
Figure 20 Upper Structure/Swivel Assembly



Back and Tilt Cylinder Assembly

Item	Part Number	Description
1	010.031.01	Retaining e-ring, 1/2" ID stainless steel
2	62.0201.00	Bolt, spring support
3	62.0202.00	Bolt, slider, shoulder
4	016.145.00	Bearing, flanged, .75 ID x .8125 OD
5	62.0200.00	Tvunnion
6	90.1085.00	Tilt cylinder assembly
7	62.0199.00	Trolley, chair back
8	002.010.00	Screw, socket head patch, 1/4-20 x 3/8" stainless steel
9	90.1069.00	Potentiometer
10	62.0061.00	Back track slider
11	62.0189.00	Spacer
12	005.036.00	Screw, 3/8-16 x 1-3/4, 2N, patch
13	005.138.01	Screw, button head socket, 10-32 x 5/16 patch
14	99.0719.00	Bracket
15	001.244.00	Screw, JCB, socket, 1/4-20 x 15mm, stainless steel
16	001.245.00	Screw, socket head, cap, 1/4-20 x 3/4"
17	62.0103.00	Wear pad, upper headrest brake
18	62.0102.00	Wear pad, lower headrest brake
19	006.148.00	Coupling
20	007.158.00	Setscrew, cone point, 1/4-20 x 1" stainless steel
21	90.1099.00	Support, back

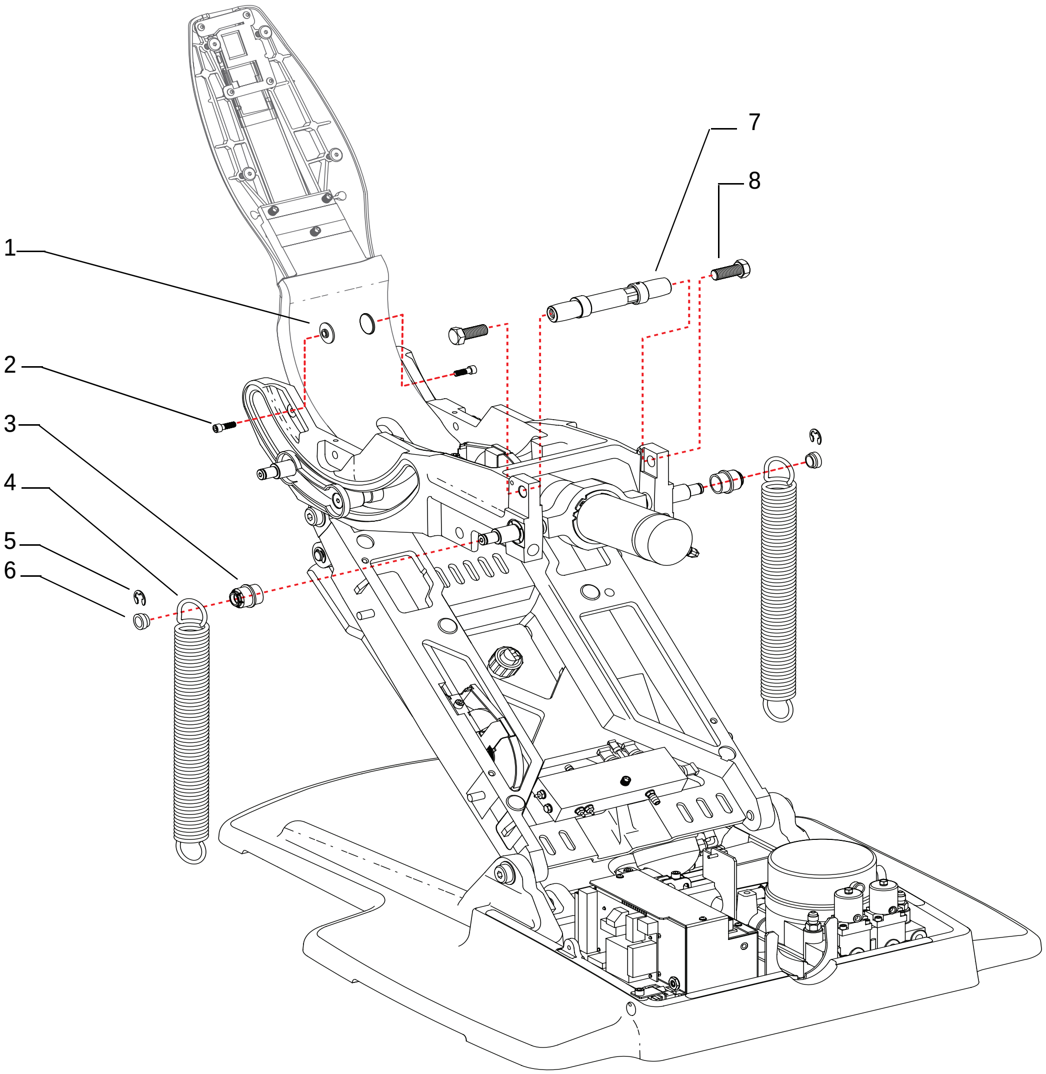
Figure 21 **Back and Tilt Cylinder Assembly**


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

Upper (Springs and Cam Assembly)

Item	Part Number	Description
1	62.0070.00	Guide, lateral
2	001.245.00	Screw, socket head, cap, 1/4-20 x 3/4"
3	62.0067.00	Roller, cam
4	013.114.00	Spring
5	010.031.01	Retaining e-ring, external 1/2" ID, stainless steel
6	62.0185.00	Spring, support
7	77.0206.00	Cam
8	001.163.00	Screw, hex head

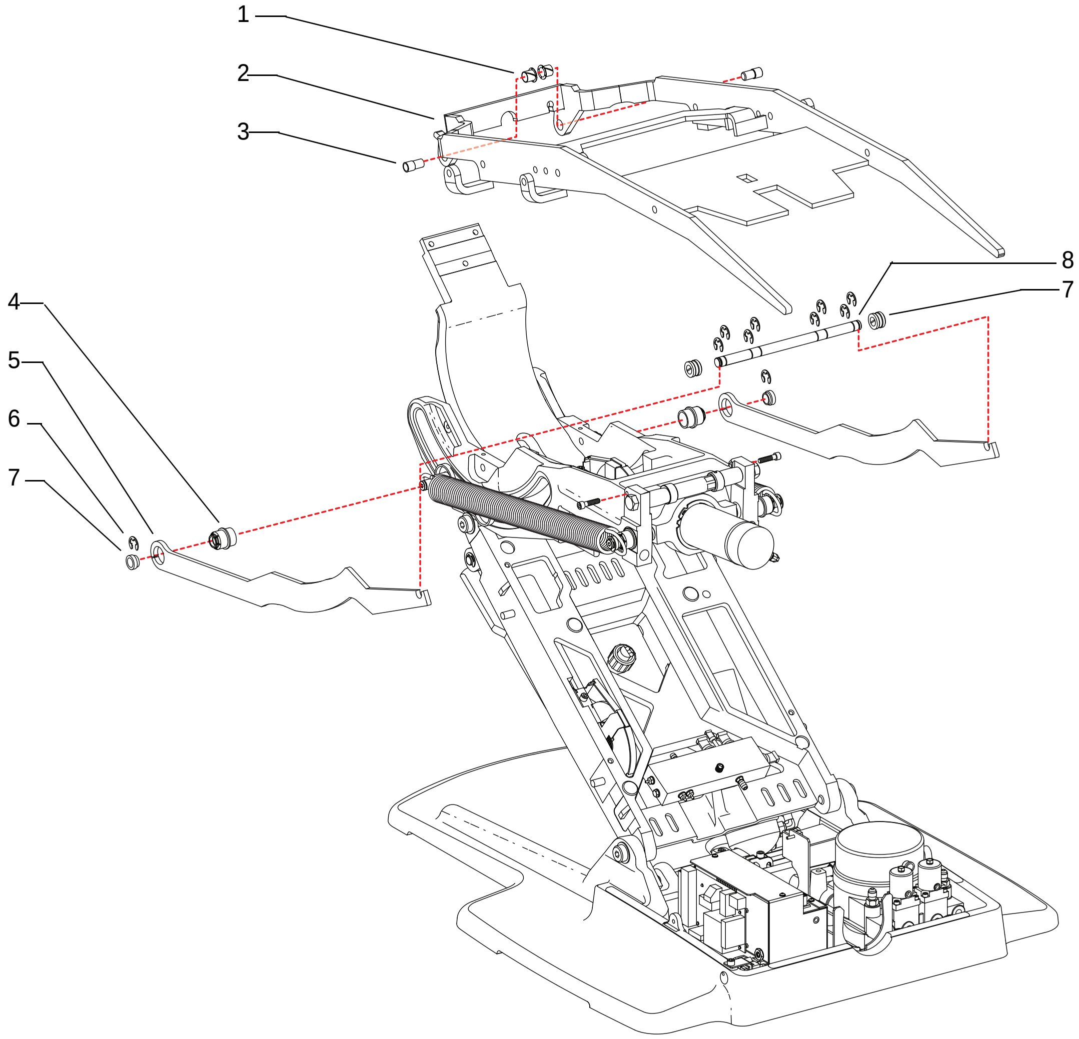
Figure 22 Upper (Springs and Cam Assembly)



Upper (Seat Assembly)

Item	Part Number	Description
1	016.065.00	Bearing, flanged, .500 ID x .562 OD
2	90.1103.00	Seat frame (includes items 1 and 3)
3	62.0196.00	Stud, mounting, shoulder, 7/16-4
4	62.0067.00	Roller, cam
5	62.0062.00	Cam seat lift
6	010.031.01	Retaining e-ring, external, 1/2" ID, stainless steel
7	62.0185.00	Spring support
8	62.0069.00	Bar

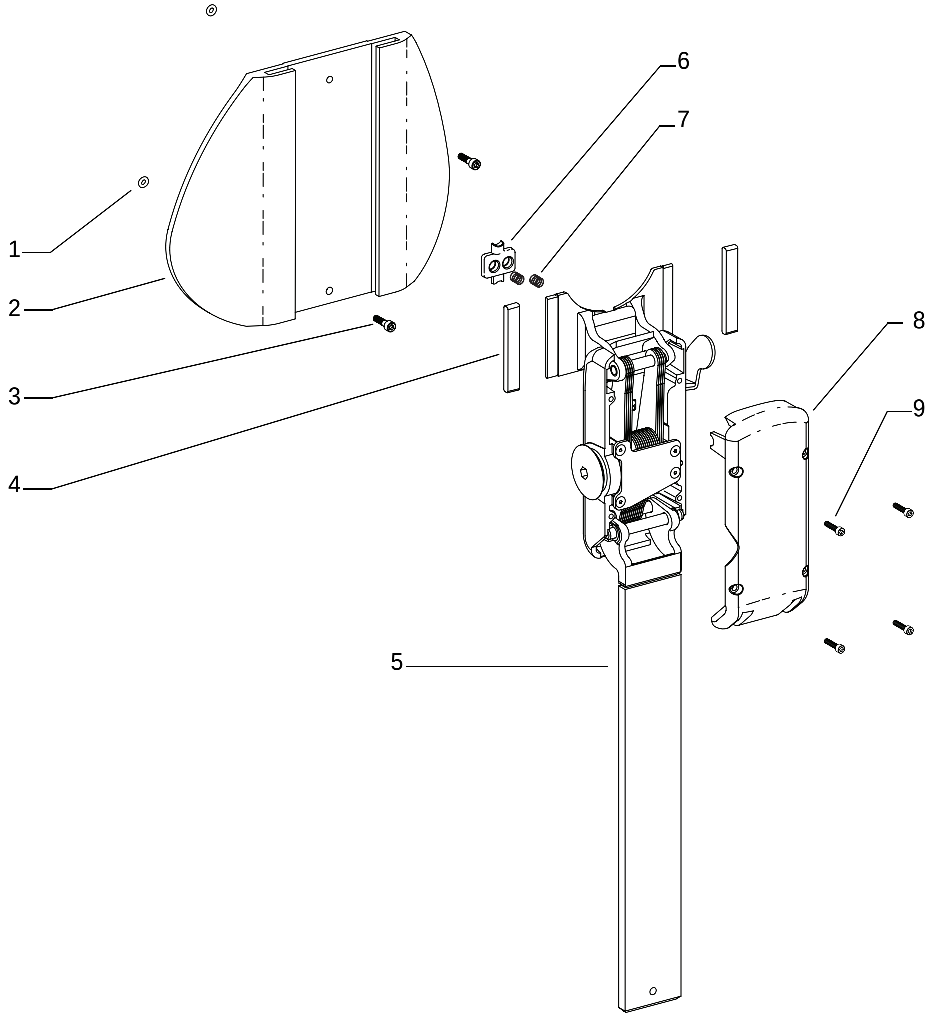
Figure 23 Upper (Seat Assembly)



Headrest Assembly

Item	Part Number	Description
1	035.048.01	O-ring, E, .115 ID x .07 W, package of 10
2	90.1092.00	Cover, headrest cushion
3	001.042.01	Screw, socket head, 6-32 x 1/2", stainless steel, patch
4	62.0021.00	Bearing, slider, headrest cushion
5	90.1091.00	Headrest assembly (includes items 3, 4, 6, 7 and 8)
6	62.0094.00	Bearing, slider, brake, headrest
7	013.005.00	Spring
8	62.0141.00	Cap, headrest
9	001.021.00	Screw, socket head, 4-40 x 1/2", stainless steel

Figure 24 **Headrest Assembly**



3

PROGRAMMING

The A-dec 500 touchpad centralizes treatment room controls into one touch surface. Some touchpad buttons have indicators to alert you if the operation is functioning. A-dec touchpads control multiple chair and delivery system functions:

- Standard Touchpad—chair, light, cuspidor controls and auxiliary equipment
- Deluxe Touchpad—chair, light, cuspidor, air/water coolant, electric handpiece, scaler, multiple users and auxiliary equipment

This section provides programming information for all of the A-dec 500 modules as well as information related to servicing, maintenance, and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

PROGRAMMING CONTENTS

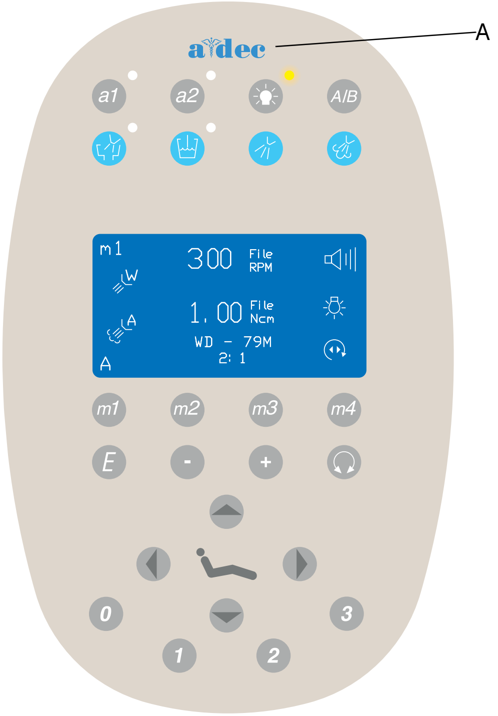
- **Status Icon, page 50**
- **Chair Positions, page 51**
- **Cuspidor Functions, page 54**
- **Dental Light, page 55**
- **Electric Handpiece Settings (Deluxe Touchpad Only), page 56**
- **Other System Choices, page 60**
- **Touchpad Circuit Board Components, page 62**

STATUS ICON

The A-dec logo on the Deluxe touchpad indicates the system status:

- Solid blue—normal operation and power is on.
- Blinking— chair stop plate or cuspidor limit switch is active. The icon returns to solid blue once you remove any obstructions.
- Double blink pattern—jumper is on the factory default position on the chair circuit board. The icon returns to solid blue once you remove the jumper.

Figure 25 **Deluxe Touchpad**


A
a-dec
a1
a2
A/B
m1
W
A
A
300 File RPM
1. 00 File Ncm
WD - 79M
2: 1
m1
m2
m3
m4
E
-
+
0
1
2
3

(A) Status Icon

CHAIR POSITIONS

The chair direction arrows on the touchpad allow you to manually move the chair base up/down and back up/down. Table 5 lists and describes the direction arrows:

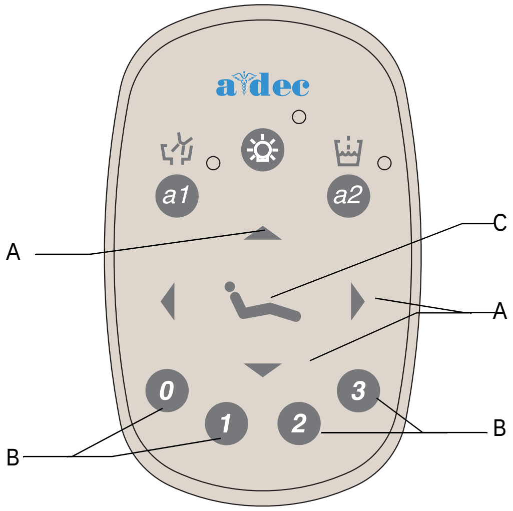
Table 5 Chair Direction

Icon	Action
◀	Back down
▼	Base down
▶	Back up
▲	Base up

Position Buttons

Chair position buttons are factory preset to automatically move the chair (see Figure 26).

Figure 26 **Chair Position Touchpad Buttons**



(A) Chair Direction Arrow; (B) Chair Position Button; (C) Program Button

Table 6 lists and describes the factory presets:

Table 6 **Chair Position Factory Presets**

Button	Description
0	Entry/exit Position. Automatically positions chair and turns off dental light.
1	Position 1. Automatically positions the chair base and back and turns on the dental light.
2	Position 2. Automatically positions the chair base and back and turns on the dental light.
3	Position 3 (x-ray/rinse). Automatically positions the chair back to either x-ray or the previous position. Toggles between the two positions and turns on/off the dental light as appropriate.

Customize Chair Positions 0-2

To customize the chair positions:

1. Use the manual controls to adjust the chair position as desired.
2. Press and release the Program button. One beep indicates programming mode.
3. Press the chair position button, within four seconds, you wish to reset (for example, Position 1). Three beeps indicate the new setting is programmed in memory.

Customize Chair Position 3

Position 3 functions either as a toggle between x-ray/rinse position and last position or as a programmable position. To customize:

1. Press and hold the program button and the Position 3 button simultaneously for three seconds. Three beeps confirm the x-ray/rinse position is now inactive, and the chair is available for programming.
2. Press the manual chair controls (arrow icons) to position the chair to the desired operating position.
3. Press and release the program button. One beep confirms programming mode.
4. Within 3 seconds, press the Position 3 button. Three beeps indicate the new setting is programmed in memory.

NOTE If Position 3 is changed to a programmable position, it operates the same as Positions 1 and 2.

To reactivate the x-ray/rinse function:

Press and hold the program button and the Position 3 button simultaneously for three seconds. Three beeps confirm the x-ray/rinse position is now active.

CUSPIDOR FUNCTIONS

Cup Fill

The cup fill function controls water flow from the cuspidor into a cup (see Figure 27).

Figure 27 **Cup Fill Button**

- Press the cup fill button for a timed operation. The factory preset is a 2.5 second fill.
- Press and hold the cup fill button for manual operation.

Bowl Rinse

Bowl rinse provides rinse water for the cuspidor bowl (see Figure 28).

Figure 28 **Bowl Rinse Button**

- Press the bowl rinse button for a timed operation. The factory preset is a 30 second rinse.
- Press and hold the bowl rinse button for manual operation.

NOTE If you press the bowl rinse button twice in less than two seconds, it switches to continuous operation mode. Press the button once to end the continuous bowl rinse mode.

Customize Cup Fill and Bowl Rinse

To program the cup fill and bowl rinse timing:

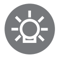
1. Press and release the Program button. One beep indicates programming mode.
2. Within 3 seconds, press and hold the cup fill or bowl rinse button for the desired time.
3. Release the button. Three beeps confirm the setting.

NOTE If you have a Standard touchpad and wish to use the Auxiliary (A1/A2) buttons, automated cup fill and bowl rinse features are not available.

DENTAL LIGHT

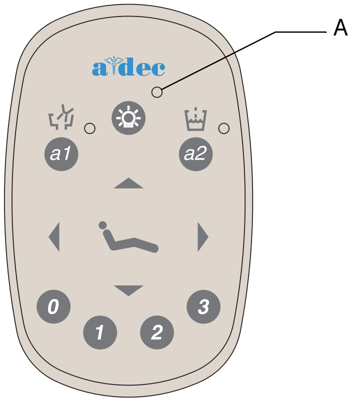
The dental light button on the touchpad functions as a three-way switch. You can turn the dental light on or off from either the touchpad or the dental light (see Figure 29).

Figure 29 **Dental Light Button**



Press the dental light button to turn on the dental light. Press the button again to toggle between two intensity settings. The dental light toggles between composite-medium intensity or composite-high intensity settings. When the dental light is in composite mode, the indicator light next to the button blinks (see Figure 30). Hold the button 1 second to turn the dental light off.

Figure 30 **Dental Light Composite Mode**



(A) Dental Light Composite Mode Blinking Indicator

Dental Light Auto Feature

The dental light has an auto on/off feature. When you use a programmed chair position (1 or 2), the dental light turns on when the chair reaches operating position. Press Position 0 (entry/exit) or Position 3 (x-ray/rinse) and the dental light automatically turns off.

NOTE If Position 3 has been changed to a programmable position, it operates the same as Positions 1 and 2.

To activate/deactivate:

- Press and hold the program and light button simultaneously for three seconds. One beep confirms the factory preset is off.
- Press and hold the program and light button simultaneously for three seconds. Three beeps confirming the factory preset is on.

ELECTRIC HANDPIECE SETTINGS (DELUXE TOUCHPAD ONLY)

Standard Mode

Activate the electric motor by withdrawing the handpiece from the holder. The settings that appear are the ones last used for that handpiece position.

The electric handpiece allows you to choose a precise pre-set speed or to "feather" up to that speed. Figure 7 lists the factory presets for electric handpieces:

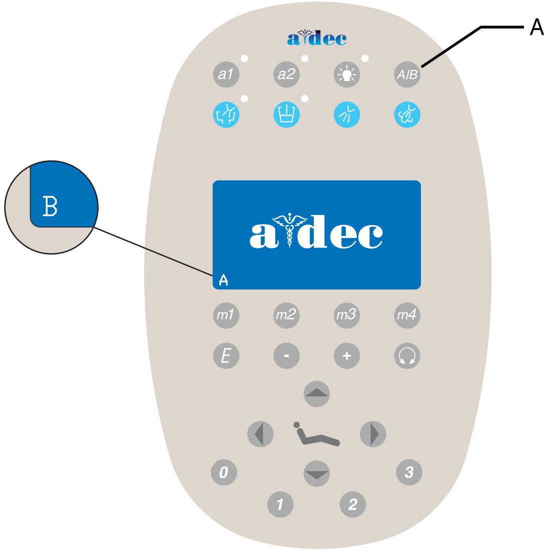
Table 7 **Electric Motor, Air and Water Coolant Presets (Standard Mode)**

Memory Button	Preset Speed	Air Coolant	Water Coolant
M1	2,000 RPM	On	On
M2	10,000 RPM	On	On
M3	20,000 RPM	On	On
M4	40,000 RPM	On	On

Program the A-dec Touchpad in Standard Mode

The A-dec Deluxe touchpad allows you to program four memory buttons with your specific RPM setting. The total range is 300-40,000 RPM. Each button can retain one setting per handpiece per operator A/B, so that a total of 16 customized settings per handpiece is possible (8 in standard mode plus 8 in endodontic mode). To specify a setting for an operator, toggle the A/B operator button before changing a setting. The display screen indicates the operator status (see Figure 31).

Figure 31 **Operator Status**

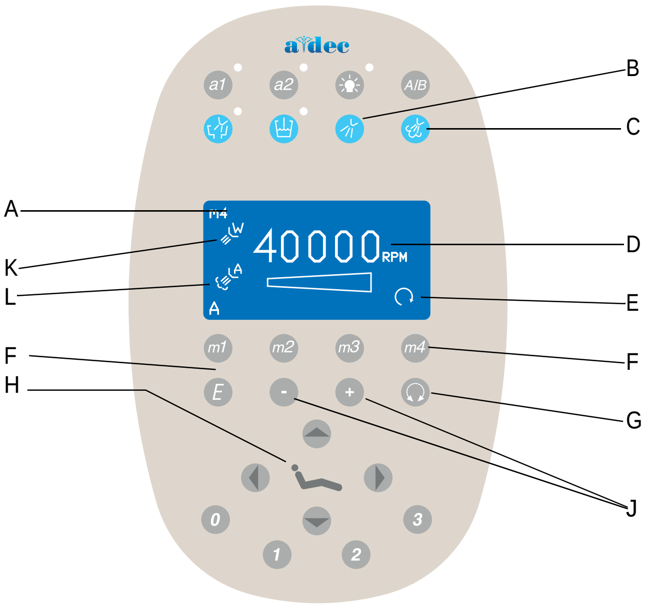


(A) A/B Operator Toggle Button

To change your handpiece setting:

1. Press the minus (-) and plus (+) buttons to adjust the RPM. The RPM values appear in the display screen (see Figure 32).
2. If desired, use the toggle buttons on the touchpad to change air and water settings.
3. To place the setting into memory (optional), press the Program button, then press the memory button you want to set. Three beeps confirm the setting.

Figure 32 **Program Handpiece Standard Mode Settings**



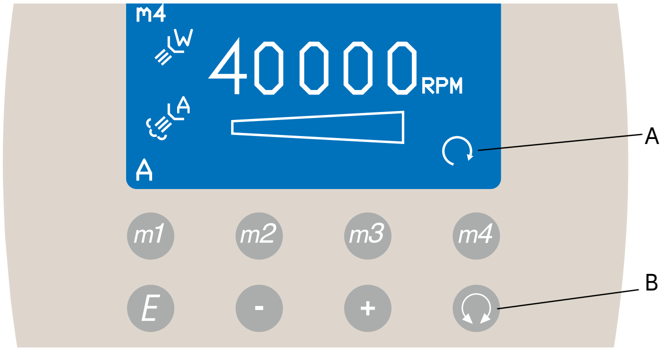
(A) Memory Setting Indicator; (B) Water Coolant Button; (C) Air Coolant Button; (D)) Speed Limit Setting; (E) Forward/Reverse Indicator; (F) Memory Button; (G) Forward/Reverse Toggle Button; (H) Program Button; (J) Use - and + Buttons to Adjust Speed; (K) Water Coolant Indicator; (L) Air Coolant Indicator

NOTE You can also use the foot control as a forward/reverse toggle. When the motor has stopped, tap the accessory (chip/air) button to change the direction.

Forward/Reverse Button

The forward/reverse toggle button changes the handpiece direction. The system defaults to the forward position when you return the handpiece to the holder or turn off the system (see Figure 33). In reverse mode, the screen indicator flashes continuously.

Figure 33 **Forward/Reverse Button**



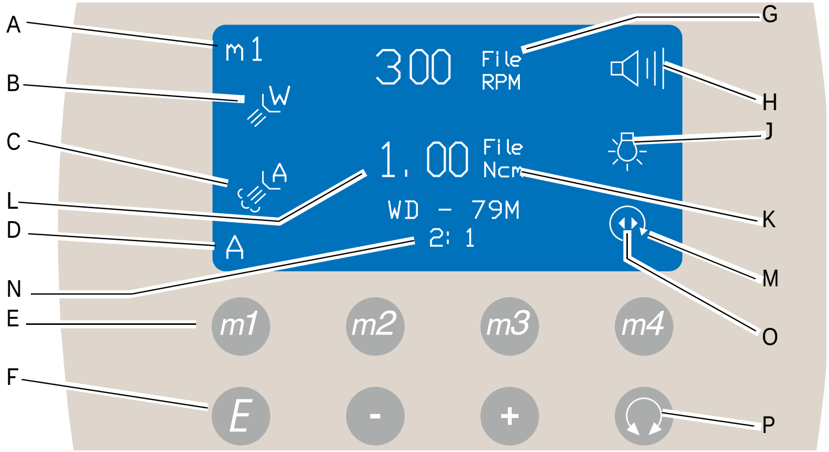
(A) Forward/Reverse Indicator; (B) Forward/Reverse Toggle Button

Endodontics Mode

In addition to handpiece speed adjustments, the endodontics mode allows you to change a number of settings based on the specific file and desired handpiece behavior. Icons in the touchpad window reflect the settings (see Figure 34).

NOTE For more information regarding speed limit and torque limit for a specific file, consult the file manufacturer.

Figure 34 **Endodontics Mode Touchpad Screen**



(A) Memory Setting Indicator; (B) Water Coolant Indicator; (C) Air Coolant Indicator; (D) Operator Status Indicator; (E) Memory Button; (F) Endodontics Mode Toggle Button; (G) File Speed Setting; (H) Warning Beep Indicator; (J) Handpiece Light Indicator; (K) File Torque Unit Indicator; (L) File Torque Limit; (M) Forward/Reverse Indicator; (N) Handpiece Ratio Setting; (O) Torque Mode Indicator; (P) Forward/Reverse Toggle Button

Program the A-dec Touchpad in Endodontics Mode

To change a setting:

1. Withdraw the handpiece from the holder.
2. If the touchpad window is not in endodontics mode, press the endodontics mode toggle button (see Figure 34). The endodontics screen appears.
3. Use the + or - button to activate the endodontics change mode. A white reverse video box appears.
4. Use the chair positioning buttons to move from setting to setting in the touchpad window.
5. Use the + and - buttons to change the setting as desired.
6. To place the speed limit, torque limit and ratio into memory (optional), press the Program button, then the memory button you want to set. Three beeps confirm the setting.

Figure 8 lists and defines the touchpad window icons for Endodontics mode:

Table 8 Endodontics Mode Settings

Icon	Setting	Description
300 File RPM	Speed	Setpoint for file speed limit. For more information, consult your file manufacturer.
1.00 File Ncm	Torque	Setpoint for file torque limit. For more information, consult your file manufacturer.
300 File gcm	Torque Units	Toggles between Ncm (Newton centimeters) and gcm (Gram centimeters). Adjusting this setting for one handpiece changes it for all handpiece settings. **NOTE** 1 Ncm=102 gcm
WD - 79M 2:1	Ratio	Sets the handpiece ratio. For more information, consult your handpiece manufacturer.
A	Air Coolant	On/Off—when active, supplies air coolant to the handpiece.
	Water Coolant	On/Off—when active, supplies water coolant to the handpiece.
☼	Light Source	On/off—when active handpiece light source is on in endodontics mode.
Auto off Auto reverse Auto forward	Torque Mode	Adjusting this setting for one handpiece changes it for all handpiece settings. This icon appears with the forward/reverse indicator. Auto-off—the motor stops when the file speed reaches the torque limit. Auto-reverse—the motor stops and reverses direction when the file reaches the torque limit. Auto-forward—when the file reaches the torque limit, the motor stops, reverses 3 turns, then changes back to forward again. **NOTE** If the file is stuck, this cycle repeats three times before the motor stops.
🔊	Beeper	On/Off—when active, warning beep sounds when you approach torque limit and double beeps when the file auto-reverses. Adjusting this setting for one handpiece changes it for all handpiece positions.

NOTE The A-dec/W&H WD-79M endodontics attachment has a special feature due to its ball-bearing design. Its life-long efficiency factor is stable and known, therefore the A-dec endodontics system is able to control and display file torque very accurately. All other handpieces have unknown life-long efficiency factors and therefore stated torque values are approximate.

OTHER SYSTEM CHOICES

Intraoral Light Source

- Auto-Off Delay—The amount of time the handpiece remains lit when idle. The default is five seconds. Stepping on the foot control refreshes the delay and the lamp relights. The light stays on as long as you depress the foot control.
- When active, the handpiece light automatically turns on when you lift the handpiece from the holder. Default is On.

- On in Endo—When active, light is operable on while in Endo mode. Default is off.

To change intraoral light source settings:

1. Press and hold the A/B and the Program button to enter set up screen
2. Select Handpieces under System Setup
3. Select Intraoral LT Source under Handpiece Setup
4. Select handpiece
5. Make adjustment under Lt Source Setup

Voltage—Depending on your brightness preference and the bulb manufacturer's usage guidelines, this represents the voltage setting adjustment for each handpiece light source (see Intraoral Light Source Voltage).

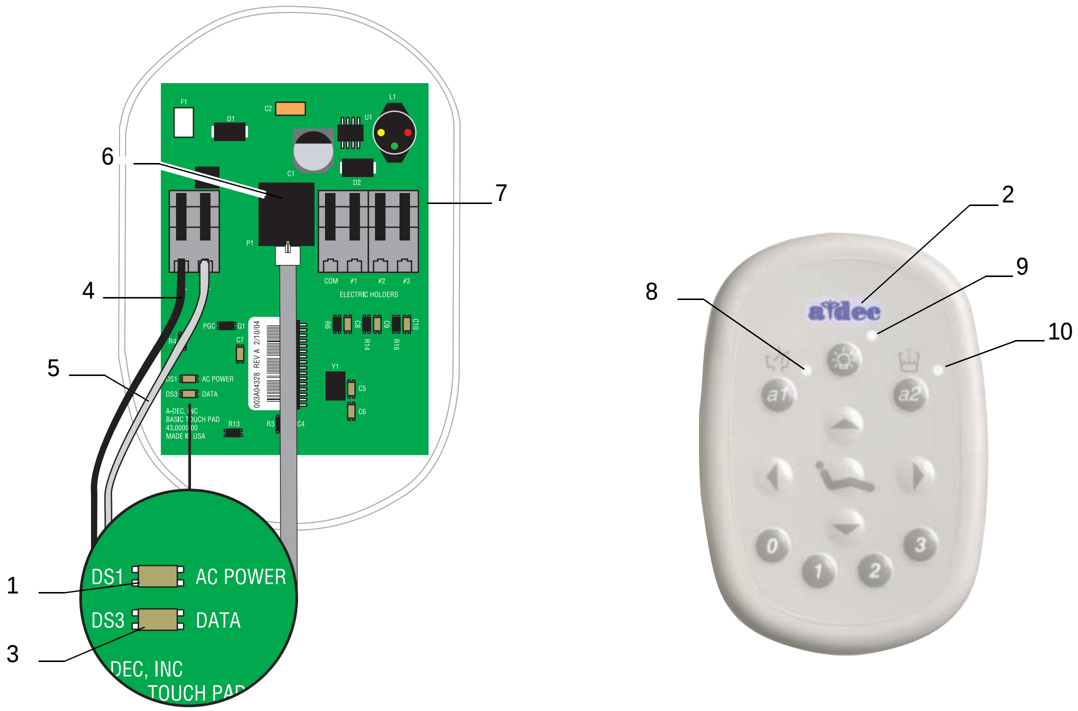
TOUCHPAD CIRCUIT BOARD COMPONENTS

Standard Touchpad

The standard touchpad has two LEDs for communicating status (AC Power and Data). The touchpad circuit board's Status LED is the A-dec icon, visible on the touchpad. Check the chair circuit board LEDs, as well as the touchpad, when troubleshooting.

Item	Description
1	DS1 - AC power LED
2	DS2 - Status LEDs
3	DS3 - Data LED
4	J1 - Ø VAC terminal strip
5	J1 - 24VAC terminal strip
6	P1 - Data line port (DCS)
7	J2 - Electric holder terminal strip
8	DS7 - Auxiliary 1 and bowl rinse LED
9	DS8 - Dental light LED
10	DS9 - Auxiliary 2 and cup fill LED

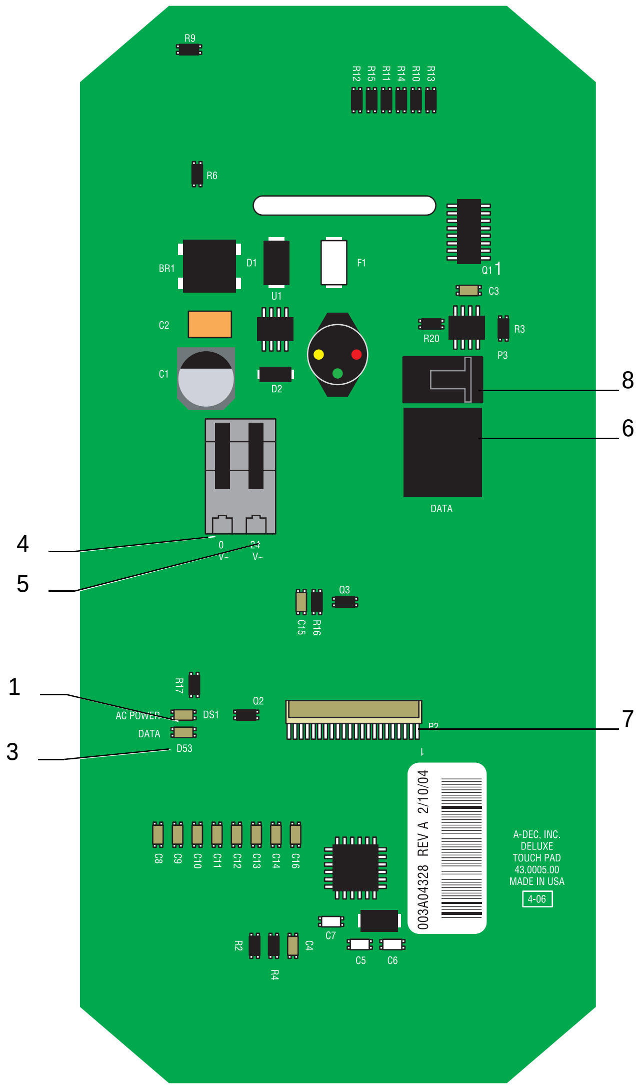
Figure 35 **Standard Touchpad Circuit Board Components**

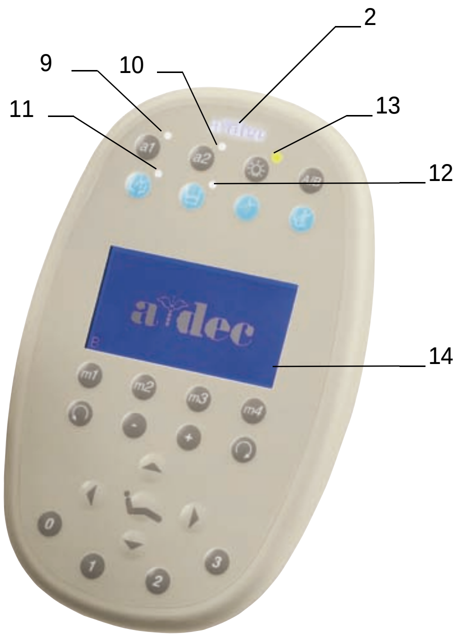

6
7
4
5
1
3
DS1
AC POWER
DS3
DATA
DEC, INC
TOUCH PAD
ELECTRIC HOLDERS
COM
#1
#2
#3
2
9
10
8
a1
a2
0
1
2
3

Deluxe Touchpad

Figure 36 Deluxe Touchpad Circuit Board Components

Item	Description
1	DS1 - AC power LED
2	DS2 - Status LEDs
3	DS3 - Data LED
4	J1 - Ø VAC terminal strip
5	J1 - 24VAC terminal strip
6	P1 - Data line port (DCS)
7	P2 - LCD display connector
8	P3 - LCD back light power connector
9	DS6 - Auxiliary 1 LED
10	DS7 - Auxiliary 2 LED
11	DS8 - Bowl rinse LED
12	DS9 - Cup fill LED
13	DS10 - Dental light LED
14	LCD display


R9
R12
R15
R11
R14
R10
R13
R6
BR1
D1
F1
Q1
C3
U1
C2
R20
R3
P3
C1
D2
8
6
DATA
4
5
0 V~
24 V~
Q3
C15
R16
1
R17
Q2
AC POWER
DS1
DATA
D53
P2
7
3
003A04328 REV A 2/10/04
A-DEC, INC.
DELUXE
TOUCH PAD
43.0005.00
MADE IN USA
4-06
C8
C9
C10
C11
C12
C13
C14
C16
C7
C5
C6
R2
R4
C4

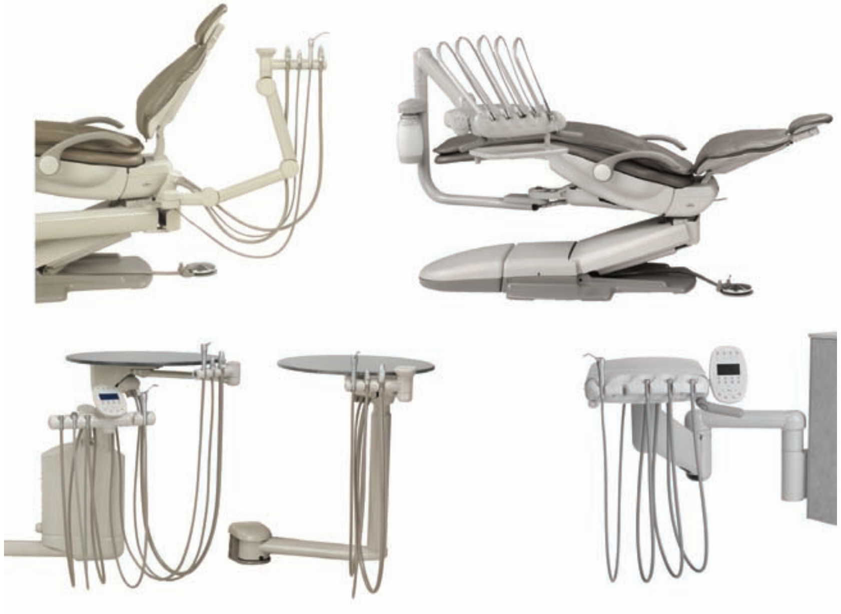

2
9
10
11
13
12
14

4

DELIVERY SYSTEMS

A-dec 500 delivery systems provide a variety of delivery options for the doctor and the assistant. The delivery system regulates the air and water used to operate the handpieces, syringes and accessories. Delivery system options include:

- Front-mounted delivery
  - Traditional (model 532) and Continenetal (model 533)
- Side mounted (model 542)
- 12 O'clock
  - Duo Delivery (model 541)
  - Assistant's Instrumentation (model 545)



PRODUCT OVERVIEW

The doctor's side of the A-dec 500 system includes both the Traditional (model 532) and Continental® (model 533) delivery systems, the front-mount monitor (model 531), and self-contained water system.

The A-dec 532 and 533 delivery systems have been designed to mount only to the A-dec 511 chair and communicate with the entire A-dec 500 product line through the Data Communications System (DCS).

The A-dec 542 Side Delivery System is designed to mount to a wall or to a Preference Collection® or Preference Slimline cabinet. An optional tray holder can be installed. When installed, the tray holder positions over the control head.

The A-dec 500 12 O'clock system features two models. The A-dec Model 541 and Model 545 are floor-mounted delivery systems that install with a variety of Preference Collection and Preference Slimline cabinets.

This section of the *A-dec Service Guide, Vol. II* contains the electrical and plumbing flow diagrams for the delivery systems, along with illustrations of exploded parts, troubleshooting and adjustments for all of the doctor's side modules.

For information on service parts, see the *Genuine A-dec Service Parts Catalog*, or contact A-dec customer service.

CHAIR-MOUNTED DELIVERY SYSTEMS

The A-dec 500 chair-mounted system features two models, the A-dec Traditional (model 532) and Continental (model 533). Both models are chair-mounted delivery systems that install on the A-dec 511 chair. The A-dec 500 standard configuration for both Model 532 and 533 has:

- Balanced flexarm with air brake
- Four handpiece control block positions
- Control head with room to house integrated accessories
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- 2-liter self-contained water system with quick-disconnect water bottle
- Standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)

CHAIR-MOUNTED SYSTEM CONTENTS

- **Product Overview, page 70**
- **Flow Diagrams, page 76**
- **Leveling/Adjustments, page 78**
- **Illustrated Parts Breakdown, page 81**

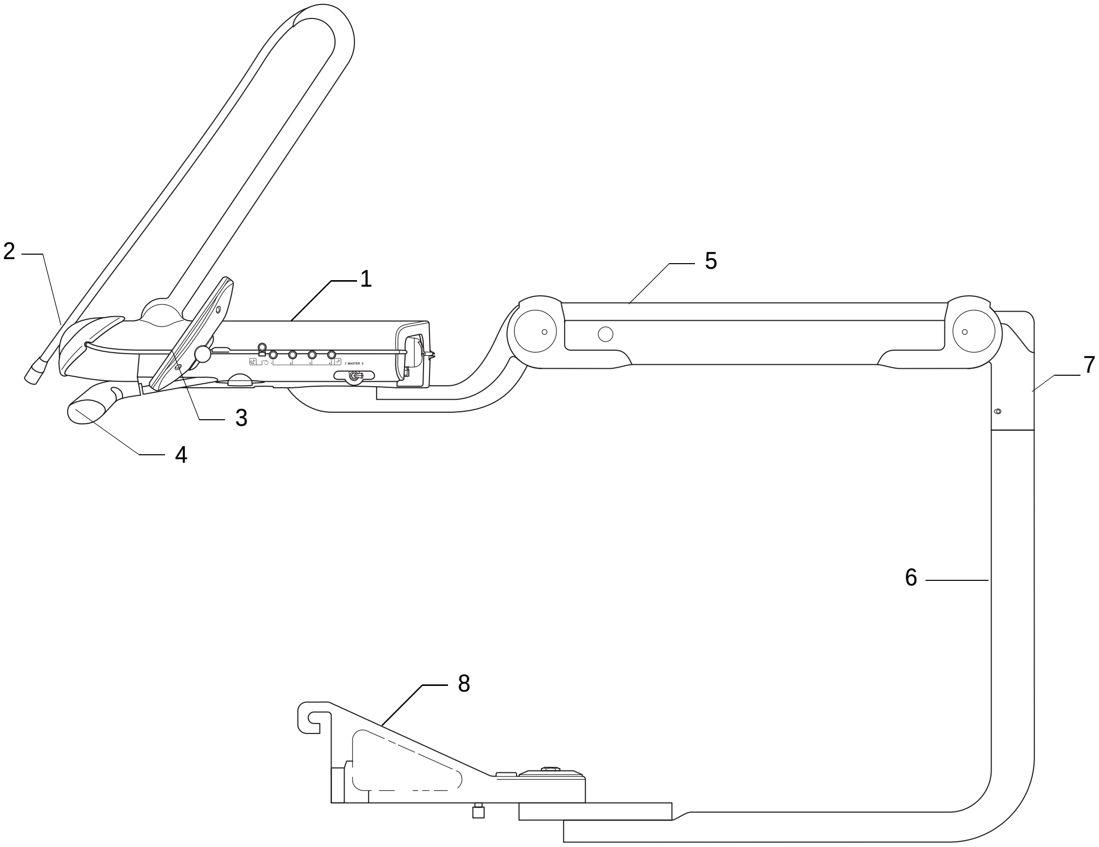
PRODUCT OVERVIEW (532/533)

A-dec 500 Delivery System Components

The A-dec 500 delivery systems and front-mount monitor both mount to the A-dec 511 chair. This mounting structure provides left/right capabilities for both the delivery system and the monitor.

Item	Description
1	Delivery system cover
2	Delivery system front cover (533 only)
3	Touchpad
4	Brake handle
5	Flexarm
6	Front-mount arm
7	Flexarm hub
8	Front-mount casting

Figure 37 **Delivery system and front-mount arm components**



Covers

The delivery system covers are designed for easy access to control components.

Delivery System Cover

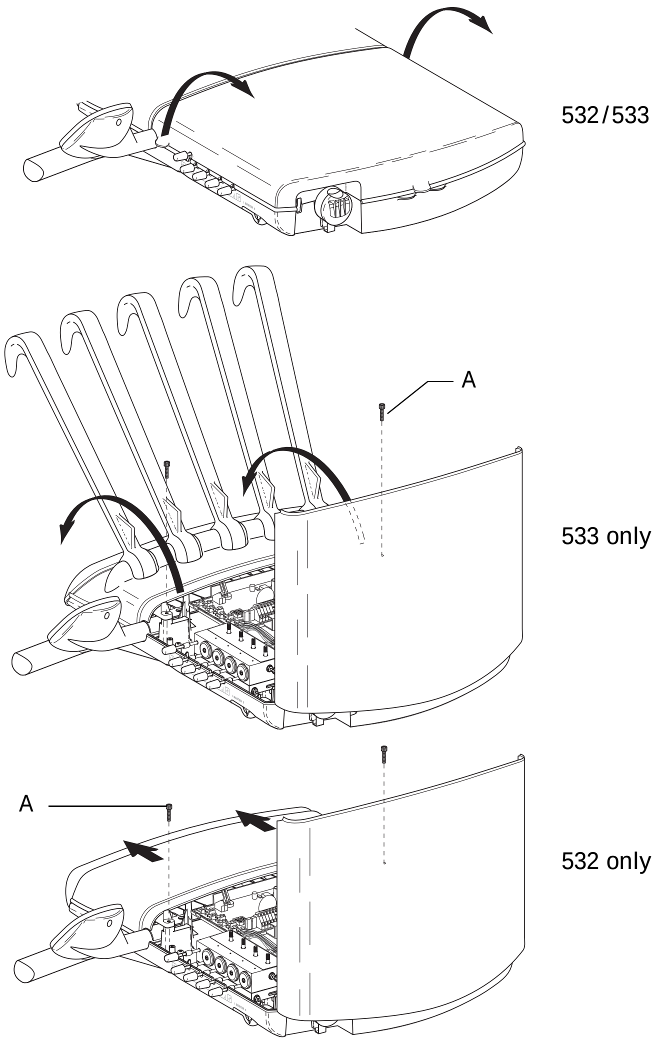
To open the delivery system cover, lift up on the center tab on the back of the delivery system cover and then, lift up the tabs on both sides of the delivery system cover. To remove the cover, pinch the hinge brackets at the cover base.

Delivery System Front Cover — Continental

To open the delivery system cover, move the whips forward and remove the two screws holding the front cover in place. Open the front cover carefully, until the lanyard is taut.

CAUTION Remove handpieces from the delivery system before opening the delivery system front cover.

Figure 38 Open the Delivery System Cover and Front Covers



(A) Screw

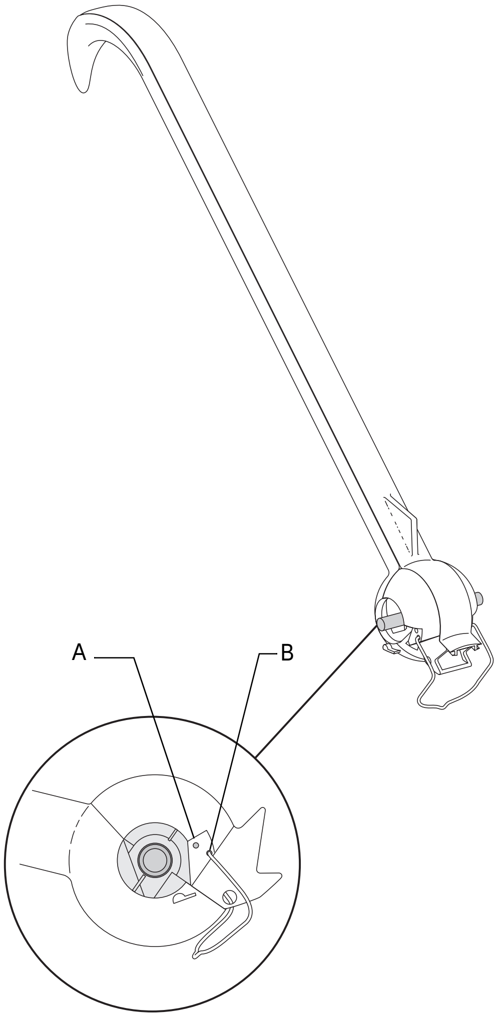
Whip Assembly

Part No: 77.0291.01

Adjust the whip return tension by placing the bail in two different locations, A or B (see Figure 39).

You can remove the whip cover for easy handpiece tubing replacement. To reinstall the whip cover, fully extend the whip and attach the back starting at the ball end and work toward the handpiece end.

Figure 39 **Whip Assembly with Adjustable Bail Position**



Attach Spring At (A) for Greater Tension or (B) for Lesser Tension

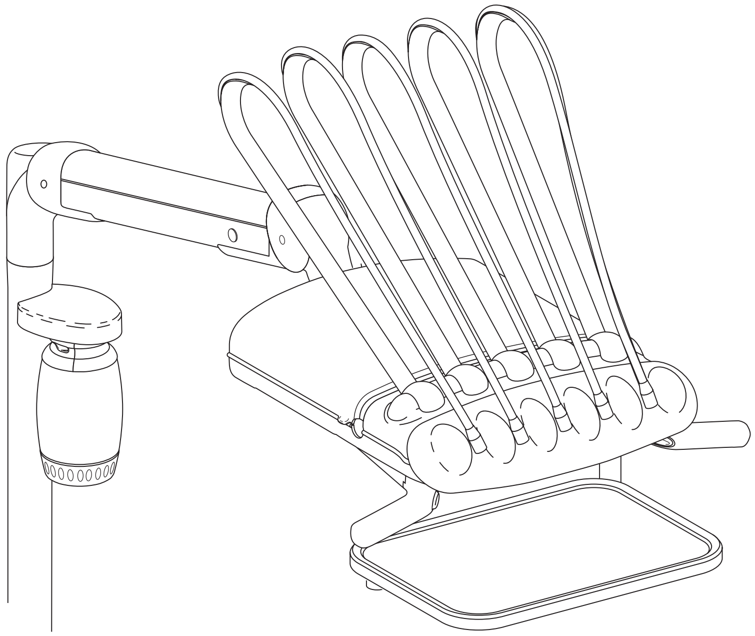
Continental Tray Holder (533 only)

Part No: 77.0294.01

Continental tray holders can be mounted on the left or right side below the delivery system.

NOTE Standard delivery systems use the Traditional tray holders. For information on Traditional tray holders refer to the All Delivery section, page 154.

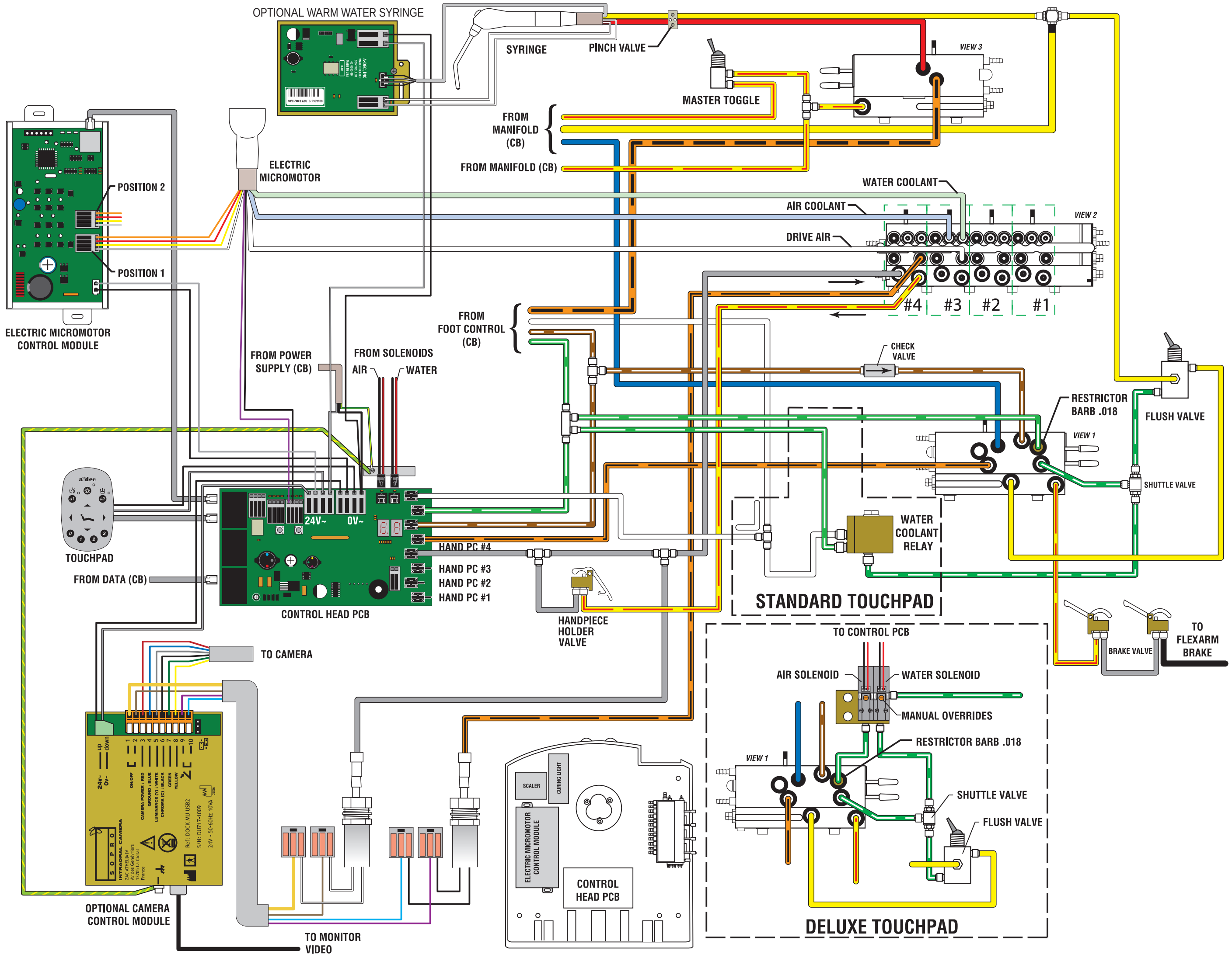
Figure 40 **Continental Tray Holder Components**



FLOW DIAGRAM (532/533)

This flow diagram details both electrical and plumbing information for servicing and troubleshooting A-dec 532 and 533 delivery systems. It is located on the inside cover of the delivery system. This diagram includes the plumbing and wiring for the standard touchpad, deluxe touchpad, camera, and electric micromotor.

Figure 41 **A-dec 532 and 533 Flow Diagram**


OPTIONAL WARM WATER SYRINGE
SYRINGE
PINCH VALVE
VIEW 3
MASTER TOGGLE
FROM MANIFOLD (CB)
FROM MANIFOLD (CB)
ELECTRIC MICROMOTOR
POSITION 2
POSITION 1
ELECTRIC MICROMOTOR CONTROL MODULE
WATER COOLANT
AIR COOLANT
VIEW 2
DRIVE AIR
#4
#3
#2
#1
FROM FOOT CONTROL (CB)
FROM POWER SUPPLY (CB)
FROM SOLENOIDS
AIR
WATER
CHECK VALVE
RESTRICTOR BARB .018
FLUSH VALVE
VIEW 1
SHUTTLE VALVE
TOUCHPAD
FROM DATA (CB)
24V~
0V~
HAND PC #4
HAND PC #3
HAND PC #2
HAND PC #1
CONTROL HEAD PCB
WATER COOLANT RELAY
STANDARD TOUCHPAD
HANDPIECE HOLDER VALVE
TO CONTROL PCB
BRAKE VALVE
TO FLEXARM BRAKE
TO CAMERA
AIR SOLENOID
WATER SOLENOID
MANUAL OVERRIDES
RESTRICTOR BARB .018
VIEW 1
SHUTTLE VALVE
FLUSH VALVE
SCALER
CURING LIGHT
ELECTRIC MICROMOTOR CONTROL MODULE
CONTROL HEAD PCB
DELUXE TOUCHPAD
OPTIONAL CAMERA CONTROL MODULE
TO MONITOR VIDEO

ADJUSTMENTS (532/533)

Front Mount

Level Adjustment

1. Position all front-mount modules, (e.g., delivery system, flexarm, tray holder assemblies) to align with the centerline of the chair.
2. Use the bubble level (if applicable) to determine when the correct front mount adjustments have been made.
3. Loosen the stabilizing screws and flanged nuts.
4. Adjust the leveling cam for side-to-side leveling.
5. Use one of the leveling bolts to adjust the front-to-back leveling. Assure both bolts are touching the casting when the delivery system is level front-to-back.
6. Tighten the leveling cam securely.
7. Tighten the stabilizing screws until the screws make contact with the casting when all of the front mount leveling adjustments have been made. Do not overtighten.

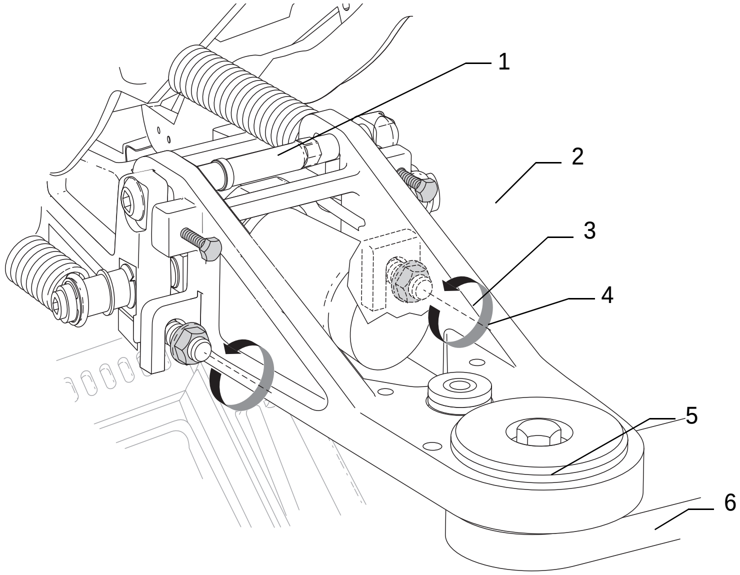
NOTE You may need to lower the back to improve access.

8. Securely tighten the flanged nuts.

Tension Adjustment

If the front-mount arm drifts, adjust the front-mount tension. To adjust the front mount tension, tighten or loosen the rotation bolt connecting the front-mount arm to the front-mount casting. Turning the rotation bolt right increases the tension on the arm and left decreases the tension.

Figure 42 **Leveling and Adjusting the Front Mount Arm**



Item	Description
1	Leveling cam
2	Stabilizing screw, 1/4-20” x 2-1/4”
3	Flanged nuts
4	Leveling bolts
5	Bubble level
6	Rotation bolt

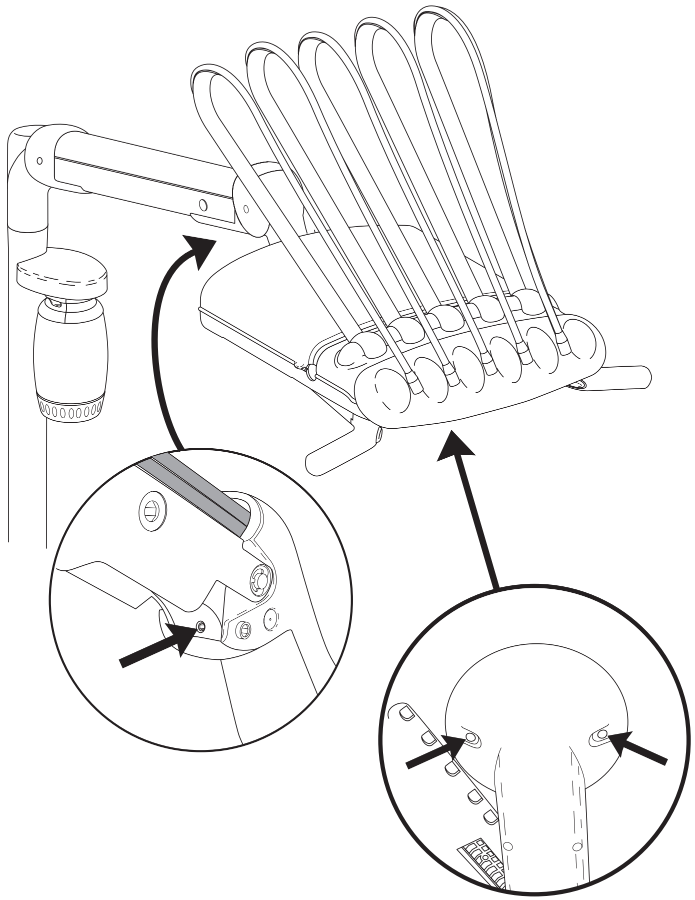
Front-to-Back Leveling

1. Remove the flexarm front knuckle covers.
2. Position the delivery system in line with the flexarm.
3. Tighten or loosen the adjustment screw on the underside of the front knuckle until the delivery system is level front-to-back.
4. Replace the covers.

Side-to-Side Leveling

Alternately tighten and loosen the two leveling screws on the underside of the delivery system until it is level side-to-side. Tighten both screws when level.

Figure 43 **Level the Delivery System in Two Locations**



ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the Traditional (Model 532) and Continental (Model 533) chair mounted delivery systems.

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

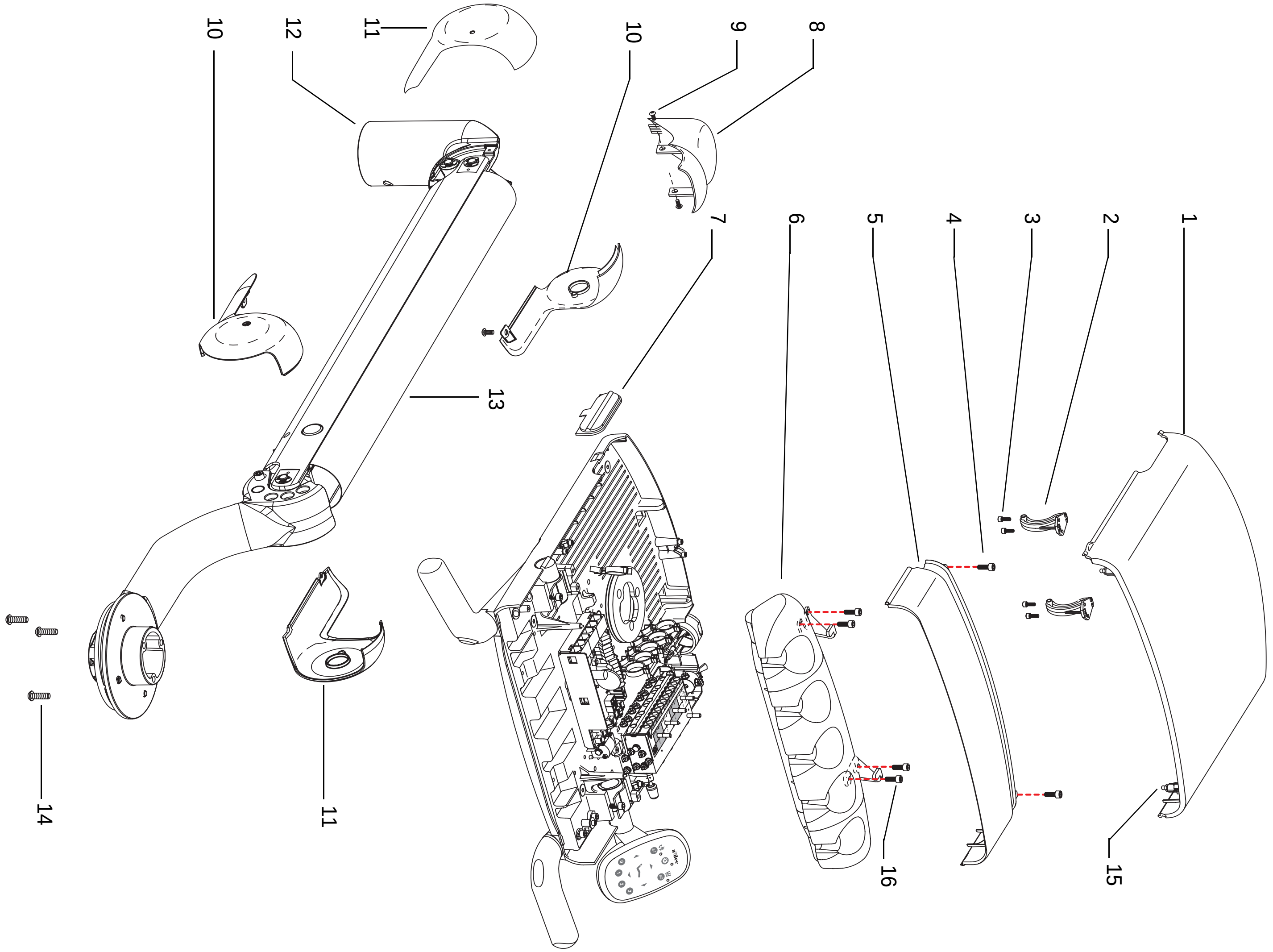
CHAIR MOUNTED DELIVERY IPB CONTENTS

- **Traditional Chair Mounted Delivery System (Model 532), page 82**
- **Continental Chair Mounted Delivery System (Model 533), page 84**
- **Delivery System — Upper Exploded (532 and 533), page 86**
- **Traditional Holder Assembly (532), page 90**
- **Continental Whip Assembly (533), page 92**
- **Continental Tray Holder, page 94**

Traditional Chair Mounted Delivery System (Model 532)

Item	Part Number	Description
1	77.0056.01	Cover, top, control head
2	77.0240.00	Hinge link
3	001.033.00	Screw, socket head, 6-32 x 3/8", stainless steel
4	002.135.00	Screw, socket head, 10-32 x 1/2", stainless steel
5	77.0079.00	Cover, transition, Traditional
6		Traditional holders assembly
7	77.0147.00	Bracket, ancillary
8	77.0143.00	Top cover
9	001.167.00	Screw, button head, socket, 6-32 x 3/8", stainless steel
10	77.0144.00†	Housing, flexarm (included in item 12)
11	77.0142.00	Cover, side, knuckle, RH
12	77.0289.00	Flexarm assembly
13	77.0144.00†	Housing, flexarm (included in item 12)
14	005.026.00	Screw, button head socket, 1/4-20 x 3/4"
15	042.222.00	Ball stud
16	005.026.00	Screw, 1/4-20 x 3/4", patch button head

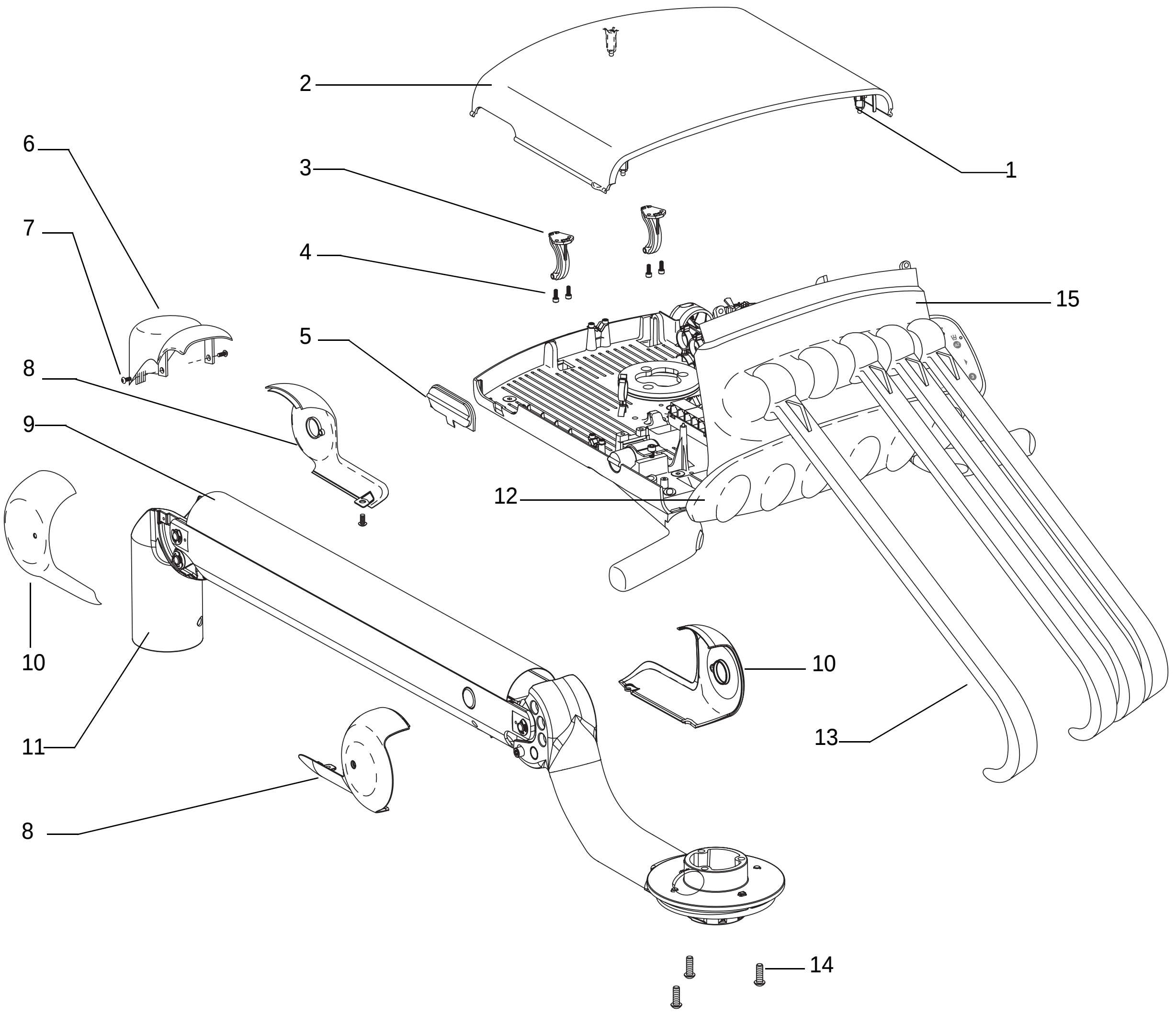
Figure 44 **Traditional Chair Mounted Delivery System (Model 532)**


10
12
11
10
9
8
7
6
5
4
3
2
1
13
14
11
16
15

Continental Chair Mounted Delivery System (Model 533)

Item	**Part Number**	**Description**
1	042.222.00	Ball stud
2	77.0056.01	Cover, top, control head
3	77.0240.00	Hinge link
4	001.033.00	Screw, socket head, 6-32 x 3/8", stainless steel
5	77.0147.00	Bracket, ancillary
6	77.0143.00	Top cover
7	001.167.00	Screw, button head, socket, 6-32 x 3/8", stainless steel
8	77.0141.00	Cover, side, knuckle, LH
9	77.0144.00†	Housing, flexarm (included in item 11)
10	77.0142.00	Cover, side, knuckle, RH
11	77.0289.00	Flexarm assembly
12	77.0070.00	Pad, instrument, Continental
13	77.0291.01	Whip assembly
14	005.026.00	Screw, button head socket, 1/4-20 x 3/4"
15	77.0065.00	Cover, top, Continental

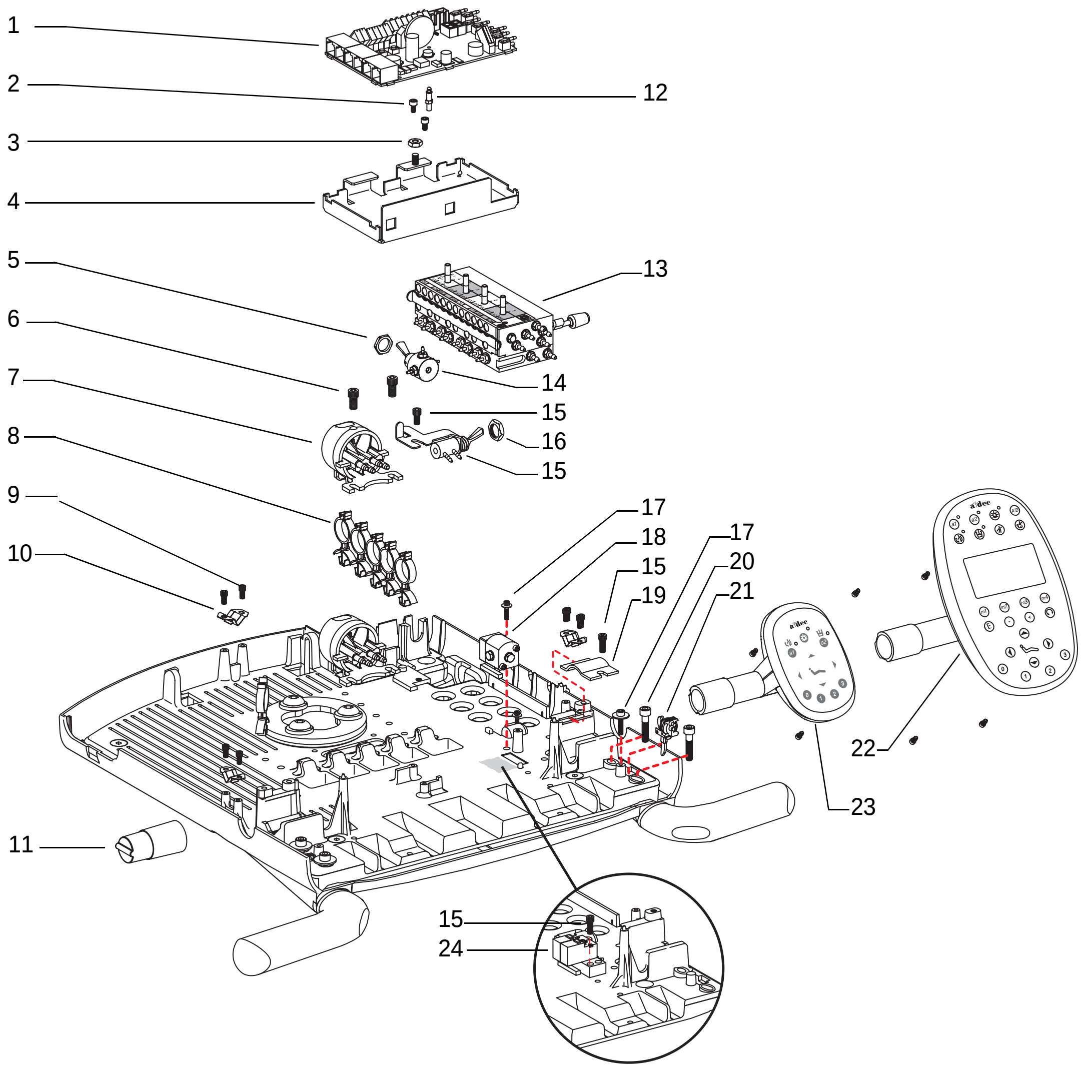
Figure 45 **Continental Chair Mounted Delivery System (Model 533)**


2
6
3
1
7
4
15
5
8
9
12
10
10
11
13
8
14

Delivery System — Upper Exploded (532 and 533)

Item	**Part Number**	**Description**
1	90.1076.00	Circuit board assembly kit
2	001.034.00	Screw, socket head, 6-32 x 1/4"
3	006.002.00	Grounding nut
4	77.0384.00	Tray
5	006.009.00	Hex nut, 15/32-32 x 9/16" x 3/32"
6	002.130.00	Screw, 10-32 x 3/8", socket head
7	90.1110.00	Oil collector assembly
8	025.115.00	Standoff, lock clip, .75 ID x .5 HT
9	001.034.00	Screw, 6-32 x 1/4", socket head
10	042.634.00	Ball spring
11	77.0150.00	Hoe plug, touchpad
12	90.1082.00	Circuit board stand-off, package of 5 (available in circuit board kit P/N 90.1076.00)
13	38.1776.00	Control block assembly
14	33.0168.00	Valve assembly, 4-way
15	002.135.00	Screw, 10-32 x 1/2", socket head, stainless steel
16	33.0048.05	Valve, toggle, 3-way
17	005.161.00	Screw, 6-32 x 5/8", socket head, stainless steel - with washer
18	38.1810.00	Relay assembly, water coolant, air actuated (standard touchpad or not touchpad only)
19	77.0152.00	Clamp, touchpad holder
20	002.112.00	Screw, 10-32 x 7/8", socket head
21	99.0667.00	Valve assembly, handle
22	90.1133.00	Kit, standard to deluxe touchpad
23	77.0297.00	Kit, standard touchpad
24	43.0057.00	Manifold assembly, solenoid, dual (deluxe touchpad only)

Figure 46 **Delivery System - Upper Exploded (532 and 533)**


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
15
17
18
15
19
17
20
21
22
23
15
24

Delivery System — Lower Exploded (532 and 533)

Item	Part Number	Description
1	002.117.00	Screw, 6/16-18 x 3/4" button head socket
2	004.009.00	Washer, split lock, steel plated, .312 ID
3	77.0265.00	Plate hub mount
4	016.133.00	Bearing, thrust, 63mm
5	013.085.00	Spring, compression, .460 OD x .625
6	77.0247.00	Brake pad, control head
7	77.0160.00	Hub, pivot, control head
8	77.0104.01	Brake handle assembly
9	77.0075.00	Plate, guide, tubing, control head
10	001.088.00	Screw, socket head, 10-32 x 5/8", stainless steel
11	77.0266.00	Bar, friction adjust, control head
12	002.085.00	Screw, flat head socket, 1/4-20 x 1/2"
13	77.0057.01	Cover, lower, control head
14	77.0424.00	Plug, hole, brake handle

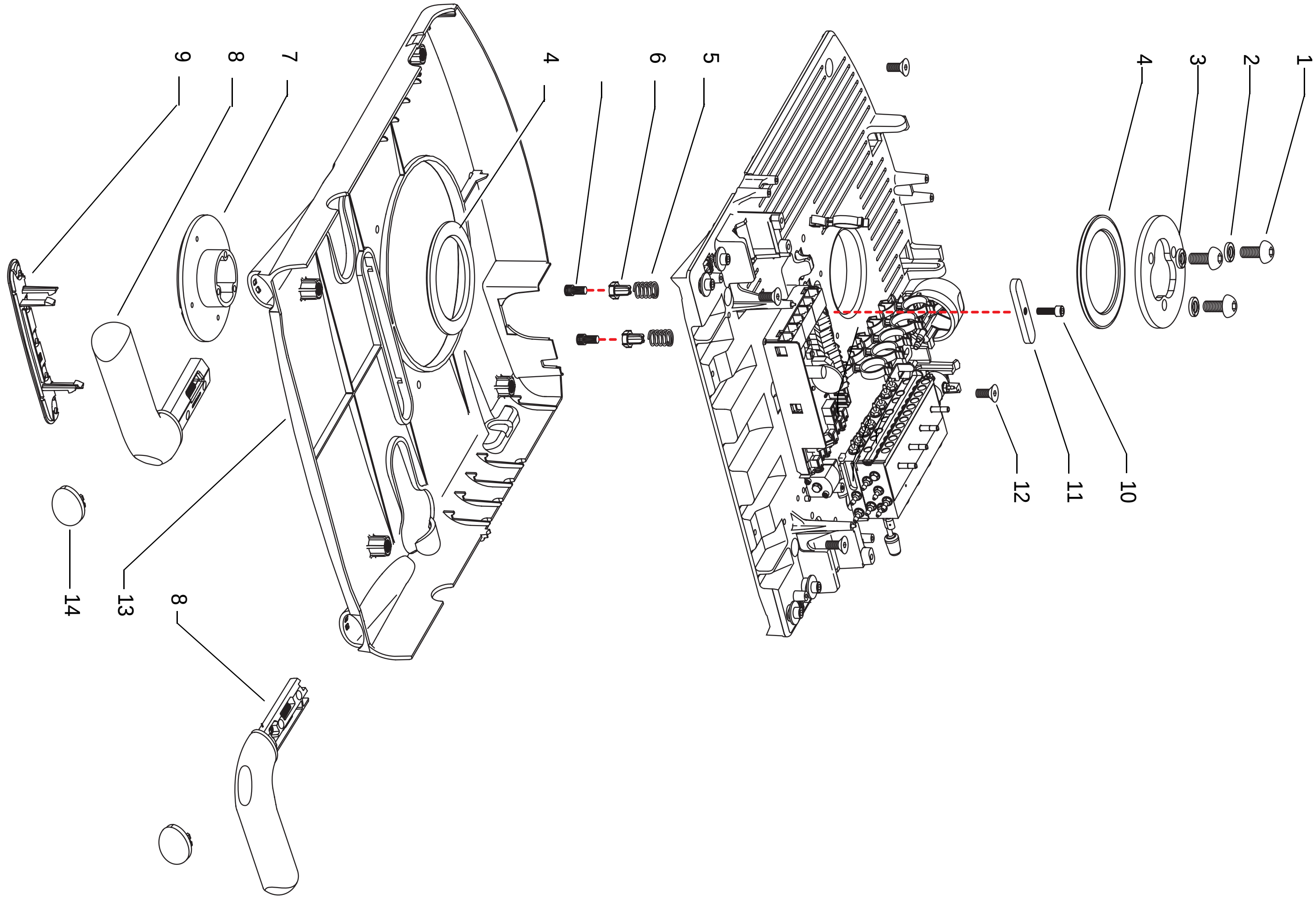
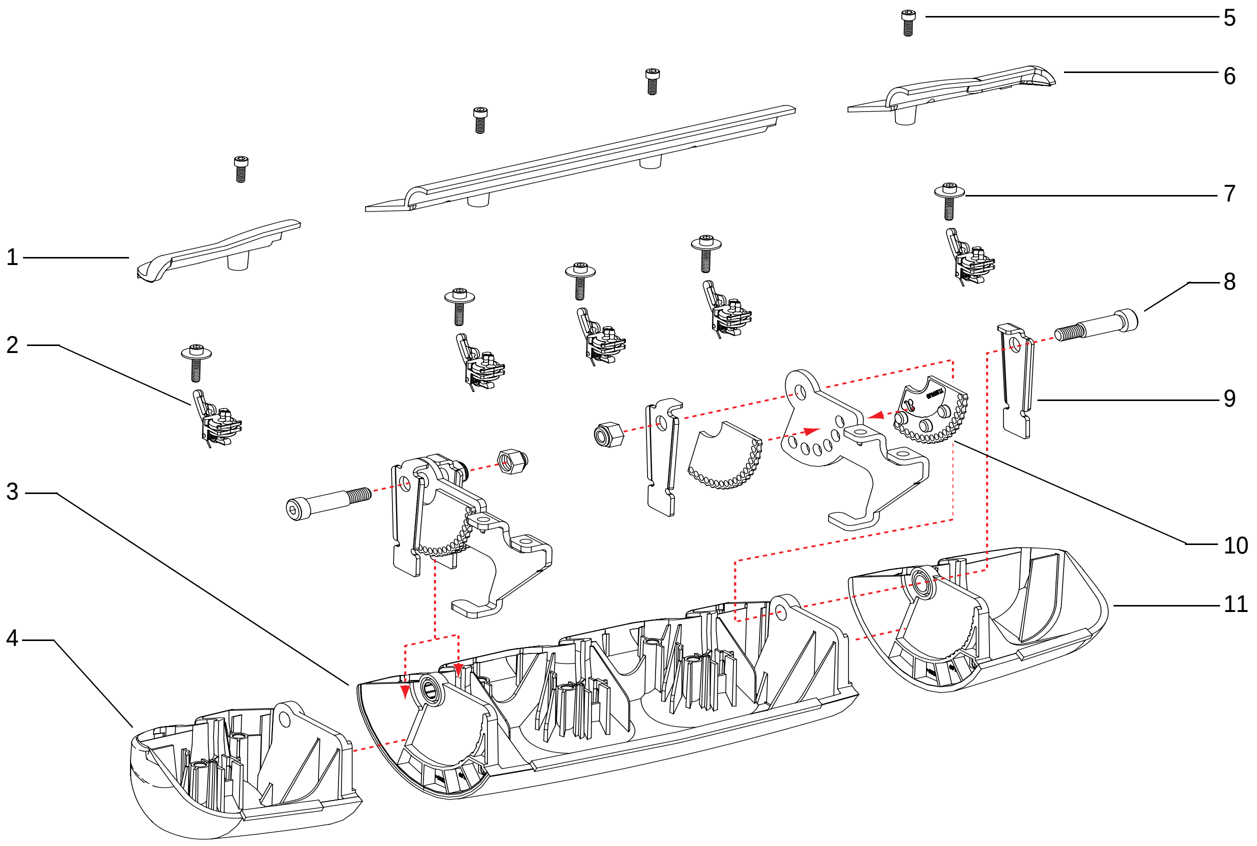

9
8
7
4
6
5
4
3
2
1
12
11
10
14
13
8

Figure 47 **Delivery System - Lower Exploded (532 and 533)**

Traditional Holder Assembly (532)

Item	Part Number	Description
1	77.0077.00	Cover, right, lower nose, Traditional
2	99.0654.00	Actuator valve
3	77.0072.00	Cover, nose, Traditional
4	77.0074.00	Holder, right, Traditional
5	001.033.00	Screw, socket head, 6-32 x 3/8"
6	77.0162.00	Cover, left, lower nose, Traditional
7	005.161.00	Screw, socket head, 6-32 x 5/8" with stainless steel washer
8	005.164.00	Screw, socket head, 1/4-20 x 5/16" x 3/4L
9	77.0237.00	Bracket, spring holder, Traditional
10	77.0078.00	Wheel, indexing, Traditional
11	77.0073.00	Holder, left, Traditional

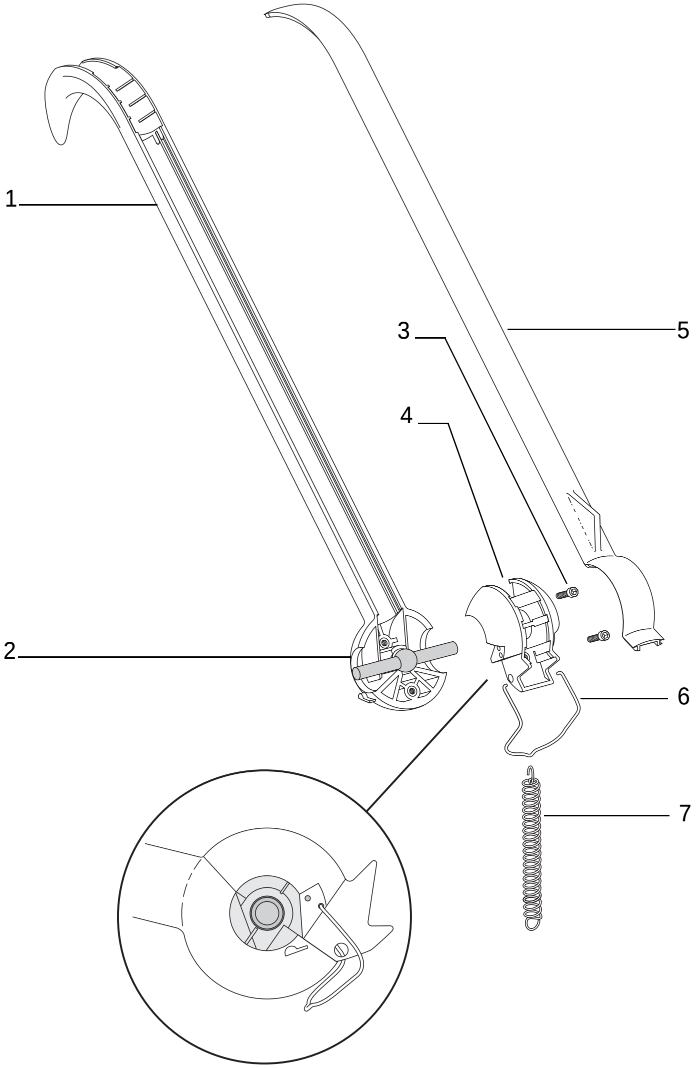
Figure 48 **532 Traditional Holder Assembly**



Continental Whip Assembly (533)

Item	Part Number	Description
1	77.0062.01	Whip overmold assembly
2	77.0187.00†	Shaft (included in item 1)
3	001.033.00	Screw, socket head, 6-32 x 3/8"
4	77.0064.00†	Pivot ball (included in item 1)
5	77.0063.00	Whip cover
6	77.0155.00	Bail, loop
7	013.123.00	Spring

Figure 49 **Continental Whip Assembly (533)**

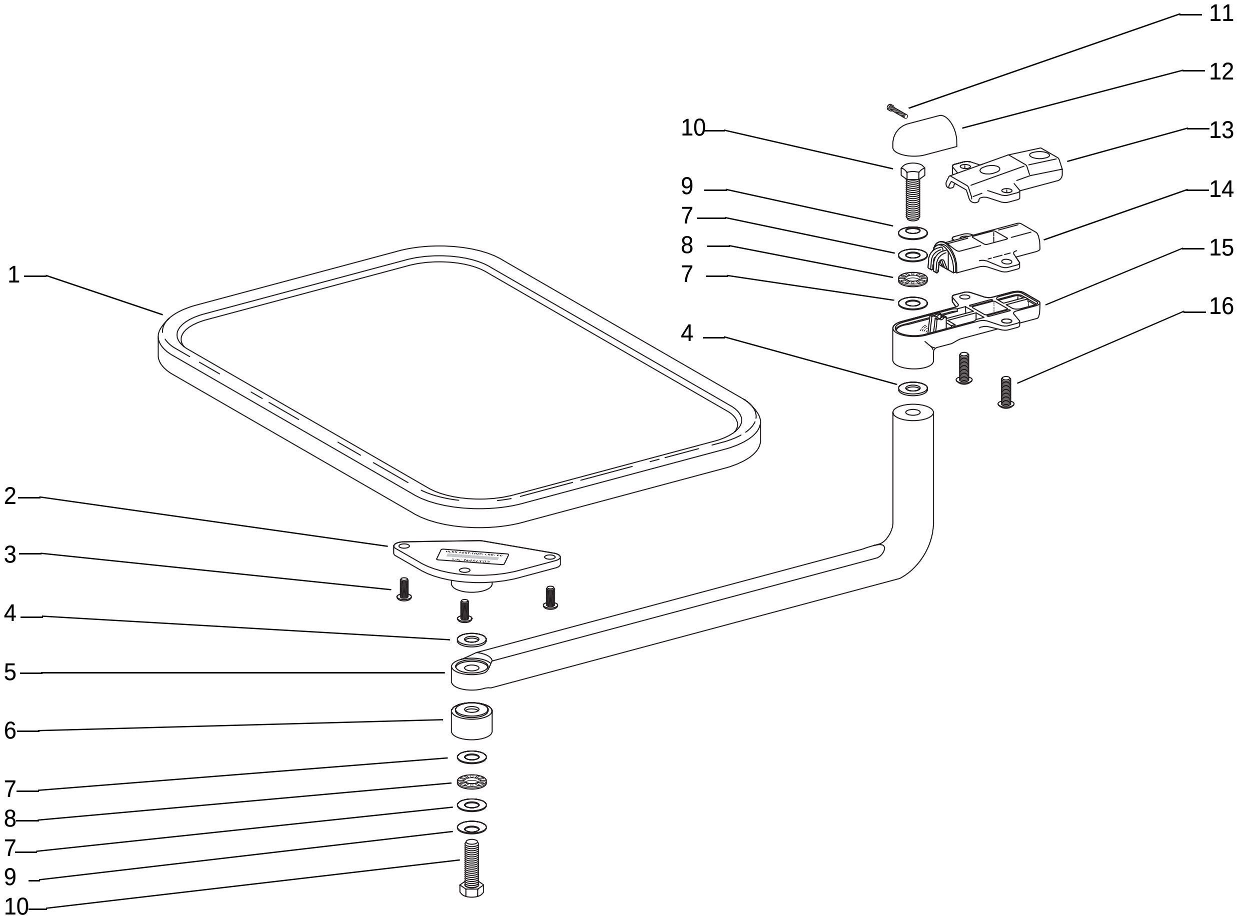


Continental Tray Holder

Part No: Standard Tray Holder P/N 77.0294.01
Large Tray Holder P/N 77.0295.01

Item	Part Number	Description
1	75.0017.00	Tray holder
2	77.0190.00	Bracket
3	005.012.03	Screw, button head socket, 10-32 x 3/8" stainless steel
4	004.242.00	Washer, flat polyethylene, .387 ID
5	77.0189.00	Arm
6	77.0198.00	Screw cover
7	004.172.00	Washer, thrust, .375 ID
8	016.102.00	Bearing, thrust, .375 ID
9	004.019.00	Washer, spring
10	002.023.01	Screw, hex head, 3/8-16 x 1-1/4"
11	002.024.00	Screw, socket head, 4-40 x 3/4"
12	77.0192.00	Elbow Cover
13	77.0332.00	Base level
14	77.0196.00	Bottom base
15	77.0194.00	Top base
16	005.026.00	Screw, 1/4-20 x 3/4" patch button head

Figure 50 **Continental Tray Holder**


11
12
10
13
9
7
14
8
7
15
1
4
16
2
3
4
5
6
7
8
7
9
10

SIDE-MOUNTED DELIVERY SYSTEMS

The A-dec 500 side-mounted system features the A-dec 542 delivery system. The side-mounted delivery system can be used with a variety of Preference and Slimline cabinets as well as a wall mount option. The A-dec 500 standard configuration for Model 542 has:

- Balanced flexarm with air brake
- Four handpiece control block positions
- Control head with room to house integrated accessories
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- 2-liter self-contained water system with quick-disconnect water bottle
- Standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)

SIDE-MOUNTED SYSTEM CONTENTS

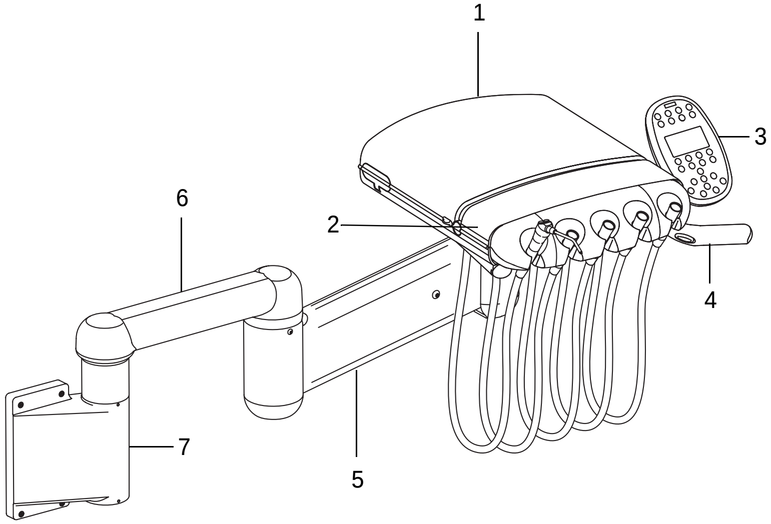
- **Product Overview, page 97**
- **Flow Diagrams, page 101**
- **Leveling/Adjustments, page 102**
- **Illustrated Parts Breakdown, page 103**

PRODUCT OVERVIEW (542)

Components

Item	Description
1	Delivery system cover
2	Delivery system front cover
3	Touchpad (optional)
4	Brake handle
5	Flexarm
6	Rigid arm
7	Mounting bracket

Figure 51 **Delivery System and Mount Components - 542**

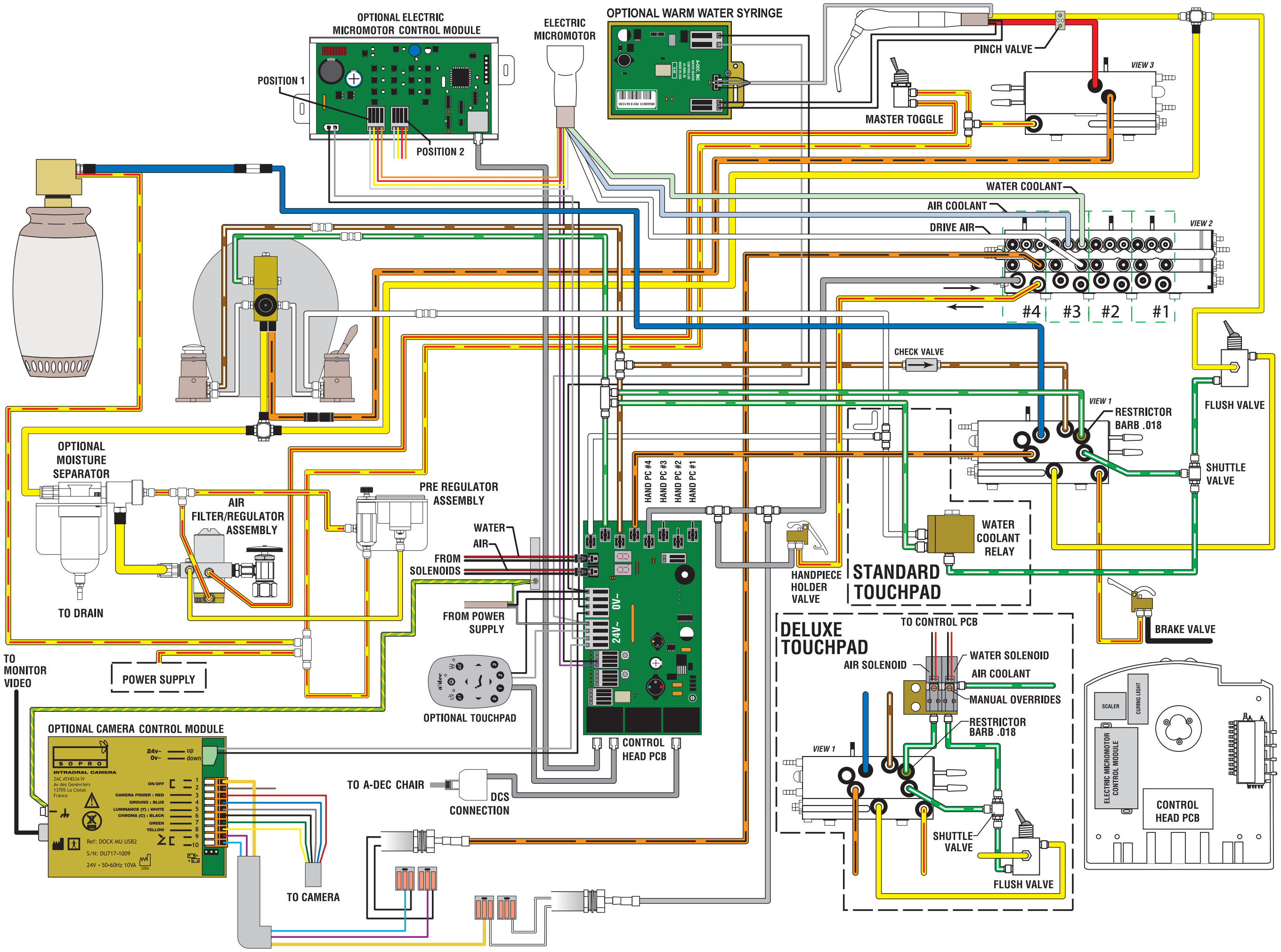


An optional tray holder (not shown) can be installed. When installed, the tray holder positions over the control head.

FLOW DIAGRAMS (542)

This section contains both plumbing and electrical flow diagrams for the 542 side delivery system. They can be referenced for troubleshooting or servicing. Refer also to the cover flow diagram which can be found on the inside cover of the delivery system control head.

Figure 52 **542 Plumbing and Wiring Flow Diagram**


OPTIONAL ELECTRIC MICROMOTOR CONTROL MODULE
POSITION 1
POSITION 2
ELECTRIC MICROMOTOR
OPTIONAL WARM WATER SYRINGE
PINCH VALVE
VIEW 3
MASTER TOGGLE
WATER COOLANT
AIR COOLANT
DRIVE AIR
VIEW 2
#4
#3
#2
#1
CHECK VALVE
VIEW 1
RESTRICTOR BARB .018
FLUSH VALVE
SHUTTLE VALVE
OPTIONAL MOISTURE SEPARATOR
AIR FILTER/REGULATOR ASSEMBLY
PRE REGULATOR ASSEMBLY
WATER
AIR
FROM SOLENOIDS
TO DRAIN
FROM POWER SUPPLY
HAND PC #4
HAND PC #3
HAND PC #2
HAND PC #1
0V~
24V~
WATER COOLANT RELAY
HANDPIECE HOLDER VALVE
STANDARD TOUCHPAD
BRAKE VALVE
TO CONTROL PCB
DELUXE TOUCHPAD
AIR SOLENOID
WATER SOLENOID
AIR COOLANT
MANUAL OVERRIDES
RESTRICTOR BARB .018
VIEW 1
SHUTTLE VALVE
FLUSH VALVE
TO MONITOR VIDEO
POWER SUPPLY
OPTIONAL TOUCHPAD
CONTROL HEAD PCB
OPTIONAL CAMERA CONTROL MODULE
24v~ up
0v~ down
SOPRO
INTRAORAL CAMERA
ZAC ATHELIA IV
Av des Genévriers
13705 La Ciotat
France
ON/OFF
CAMERA POWER : RED
GROUND ; BLUE
LUMINANCE (Y) ; WHITE
CHROMA (C) ; BLACK
GREEN
YELLOW
1
2
3
4
5
6
7
8
9
10
Ref: DOCK MU USB2
S/N: DU717-1009
24V - 50-60Hz 10VA
2006
TO A-DEC CHAIR
DCS CONNECTION
TO CAMERA
SCALER
CURING LIGHT
ELECTRIC MICROMOTOR CONTROL MODULE
CONTROL HEAD PCB

LEVELING/ADJUSTMENTS (542)

Flexarm Counterbalance

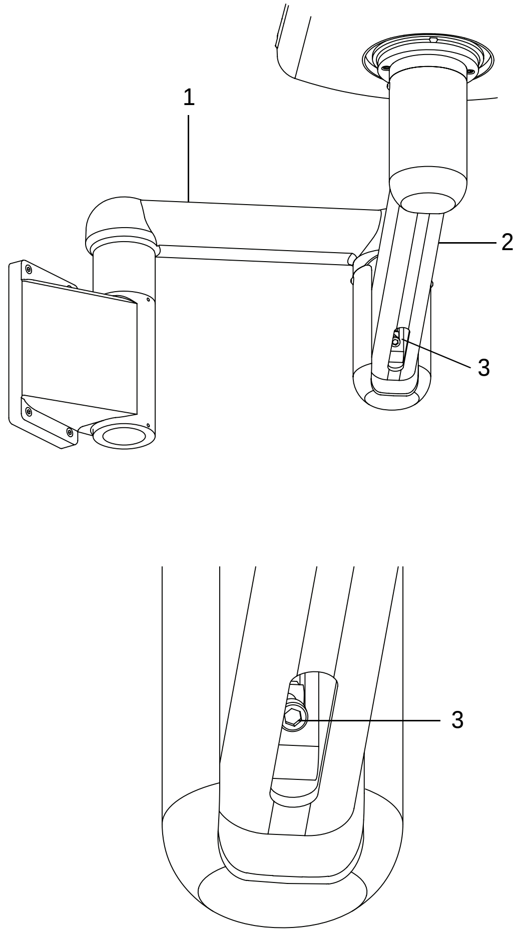
Adjust the flexarm counterbalance if the control head on the A-dec 542 Side Delivery System drifts up against the cabinet or drops when the master switch is turned off.

NOTE If the delivery system is not mounted under a cabinet, adjust the counterbalance to the midpoint of the operating position. Load the tray holder with a typical load before adjusting the flex arm counterbalance.

1. Load the control head for normal use attaching handpieces and placing a loaded tray on the tray holder.
2. Move the control head to the lowest position.
3. Turn the master On/Off toggle off. If the control head drifts up against the cabinet, the counterbalance needs adjustment.
4. Insert a hex hey into the adjustment screw.
   - Turn the hex key to the right to increase the upward drift.
   - Turn the hex key to the left to reduce the upward drift.

Item	Description
1	Rigid arm
2	Flexarm
3	Adjustment screw

Figure 53 **Flexarm Counterbalance**



ILLUSTRATED PARTS BREAKDOWN (542)

This section contains illustrated parts breakdowns specific to the side delivery system (Model 542).

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

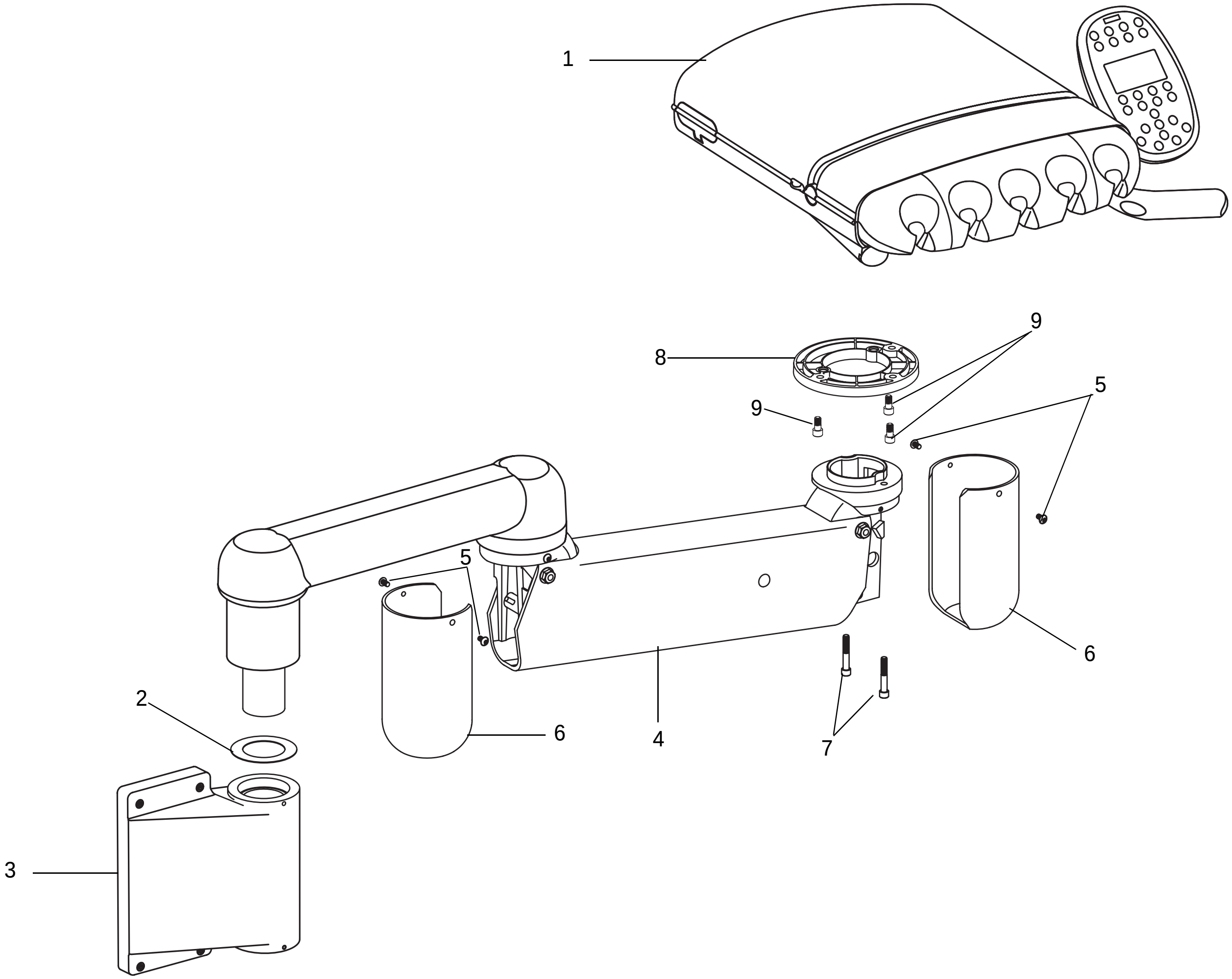
SIDE DELIVERY SYSTEM IPB CONTENTS

- **Side Delivery System, page 104**
- **Side Delivery System Upper Structure, page 106**
- **Side Delivery System Covers and Brake, page 108**
- **Control Head, page 110**
- **Traditional Holder Assembly, page 112**

Side Delivery System

Item	Part Number	Description
1		A-dec 500 control head assembly
2	004.210.00	Washer, flat, Nylatron, 1.760 ID
3	77.0582.00	Mounting adaptor with bearing
4	77.0580.00	542 flexarm with 13" rigid arm (includes items 2, 5, 6, 7)
	77.0581.00	542 flexarm with 22" rigid arm (includes items 2, 5, 6, 7)
5	005.012.03	Screw, button head socket, 10-32 x 3/8, stainless steel
6	77.0464.00	Cover, flexarm knuckle
7	005.008.01	Cap screw, 1/4-20 x 1-1/2, socket head, stainless steel
8	77.0465.00	Adaptor, control head
9	005.008.01	Screw, 1/4-20x1/2, socket head

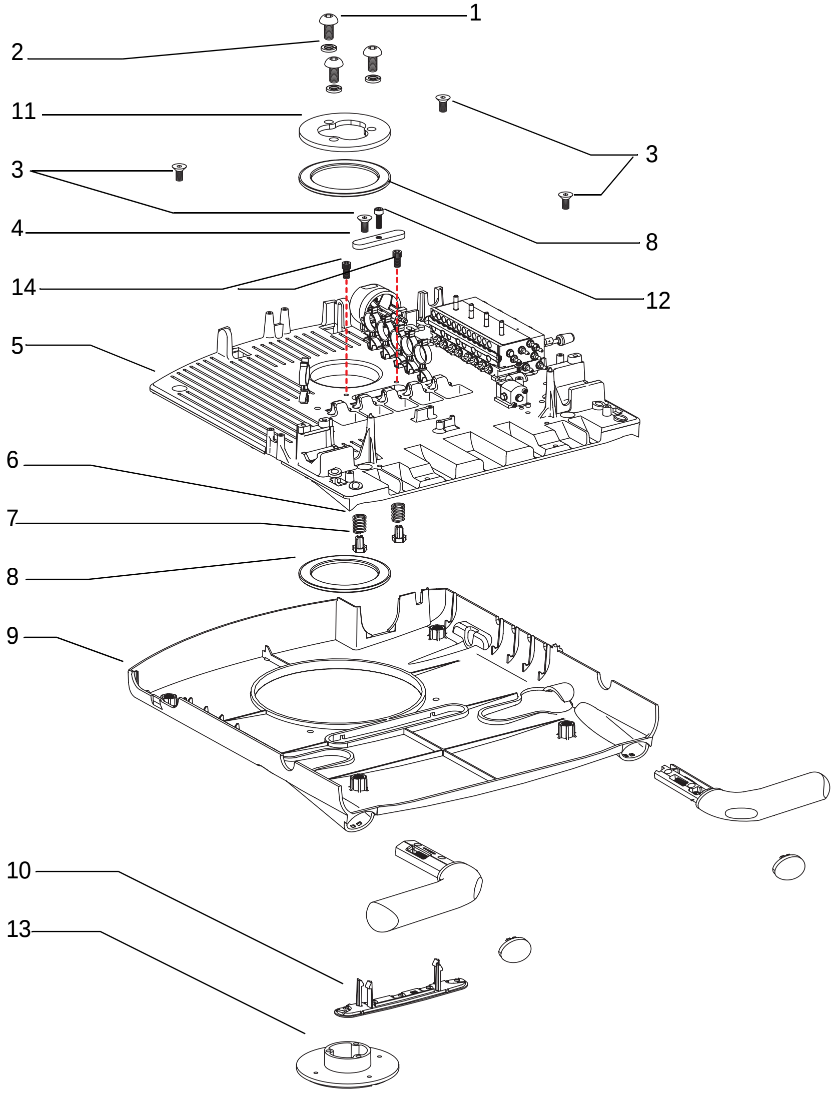
Figure 54 **Side Delivery System**



Side Delivery System Upper Structure

Item	Part Number	Description
1	002.117.00	Screw, button head socket, 5/16 - 18 x 3/4
2	004.009.00	Washer, split lock, steel plated, .312 ID
3	002.085.00	Screw, flat head socket, 1/4-20 x 1/2
4	77.0266.00	Bar, friction adjust, control head
5	77.0146.01	Baseplate, control head
6	013.085.00	Spring, compression,.460 OD x .625
7	77.0247.00	Brake pad, control head
8	016.133.00	Bearing, thrust, 63 mm
9	77.0057.01	Cover, lower, control head
10	77.0075.00	Plate, guide, tubing , control head
11	77.0265.00	Plate hub mount, control head
12	001.088.00	Screw, socket head, 10-32 x 5/8, stainless steel
13	77.0160.00	Hub, pivot, control head
14	002.130.00	Screw, socket head, 10-32 x 3/8

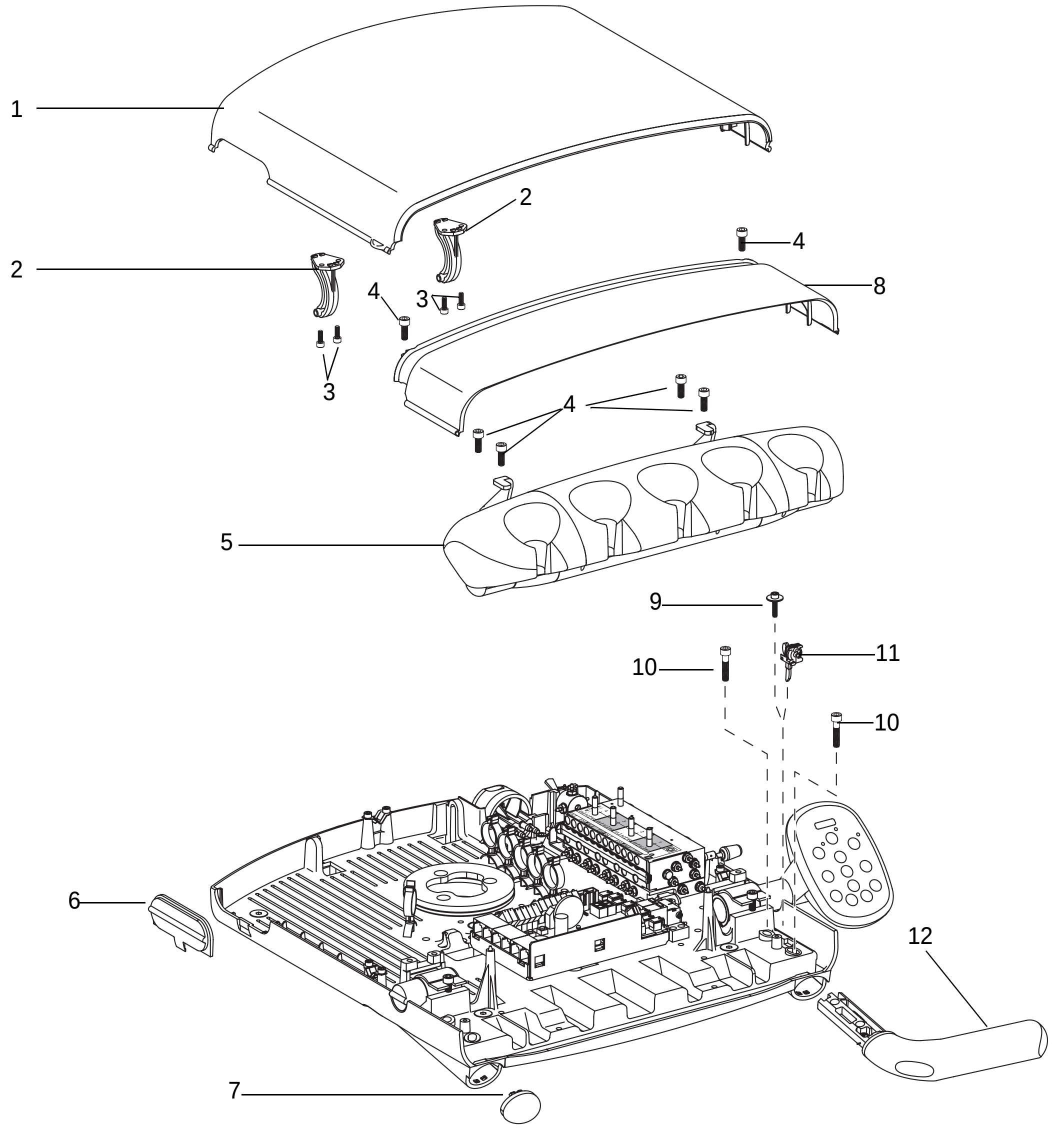
Figure 55 **Side Delivery System Upper Structure**


1
2
11
3
3
4
8
14
12
5
6
7
8
9
10
13

Side Delivery System Covers and Brake

Item	Part Number	Description
1	77.0056.01	Cover, top, control head
2	77.0240.00	Hinge link
3	001.033.00	Screw, socket head, 6-32 x 3/8, stainless steel
4	002.135.00	Screw, socket head, 10-32 x 1/2, stainless steel
5		Traditional holder assembly
6	77.0147.00	Bracket, ancillary
7	77.0424.00	Plug, hole, brake handle
8	77.0079.00	Cover, transition, traditional
9	005.161.00	Screw, socket head
10	002.112.00	Screw, socket head, 10-32 x 7/8
11	99.0667.00	Valve assembly, control handle
12	77.0104.01	Brake handle assembly, control head (over the counter part)

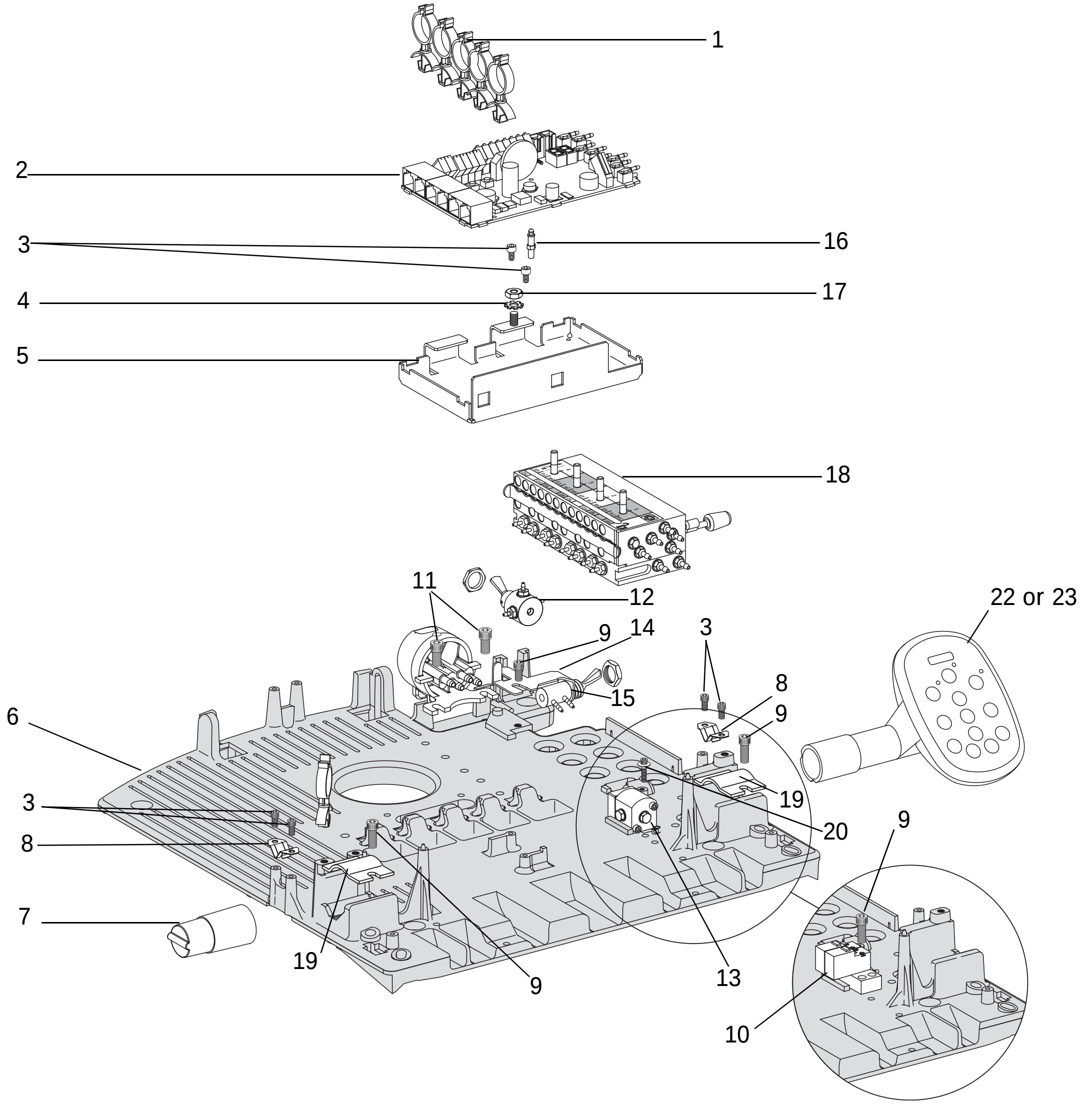
Figure 56 Side Delivery System Covers and Brakes


1
2
2
4
8
4
3
3
4
5
9
10
11
10
6
12
7

Control Head

Item	Part Number	Description
1	025.115.00	Standoff, lock clip, .75 ID x .5 HT
2	90.1076.00	Circuit board assembly
3	001.034.00	Screw, socket head, 6-32 x 1/4
4		Grounding washer
5	77.0384.00	Tray, printed circuit board mount, control head
6	77.0146.01	Baseplate, control head
7	77.0150.00	Hole plug, touchpad, control head
8	042.221.00	Ball spring
9	002.135.00	Screw, socket head, 10-32 x 1/2 stainless steel
10	43.0057.00	Manifold assembly, solenoid, dual (Deluxe touchpad only)
11	002.130.00	Screw, 10-32 x 3/8, socket head
12	33.0168.00	Valve assembly, 4-way
13	38.1810.00	Relay assembly, water coolant, air actuated, non adjustable (Standard or no touchpad only)
14		Bracket, master toggle assembly
15	33.0048.05	Valve, toggle, 3-way, Gray
16	90.1082.00	Standoff, printed circuit board, plastic, 3/8 H, 6-32 O, package of 5
17		Grounding nut
18	38.1776.00	Control block assembly
19	77.0152.00	Clamp, touchpad holder
20	005.161.00	Screw, socket head, 6-32 x 5/8, with washer, stainless steel
21	001.240.00	Screw, socket head, 6-32 x 3/4, stainless steel
22	77.0297.00	Touchpad module, standard touchpad
23	90.1133.00	Touchpad module, deluxe touchpad
	90.1076.00	Kit, PCA control head, intraoral light source (includes items 2, 16)

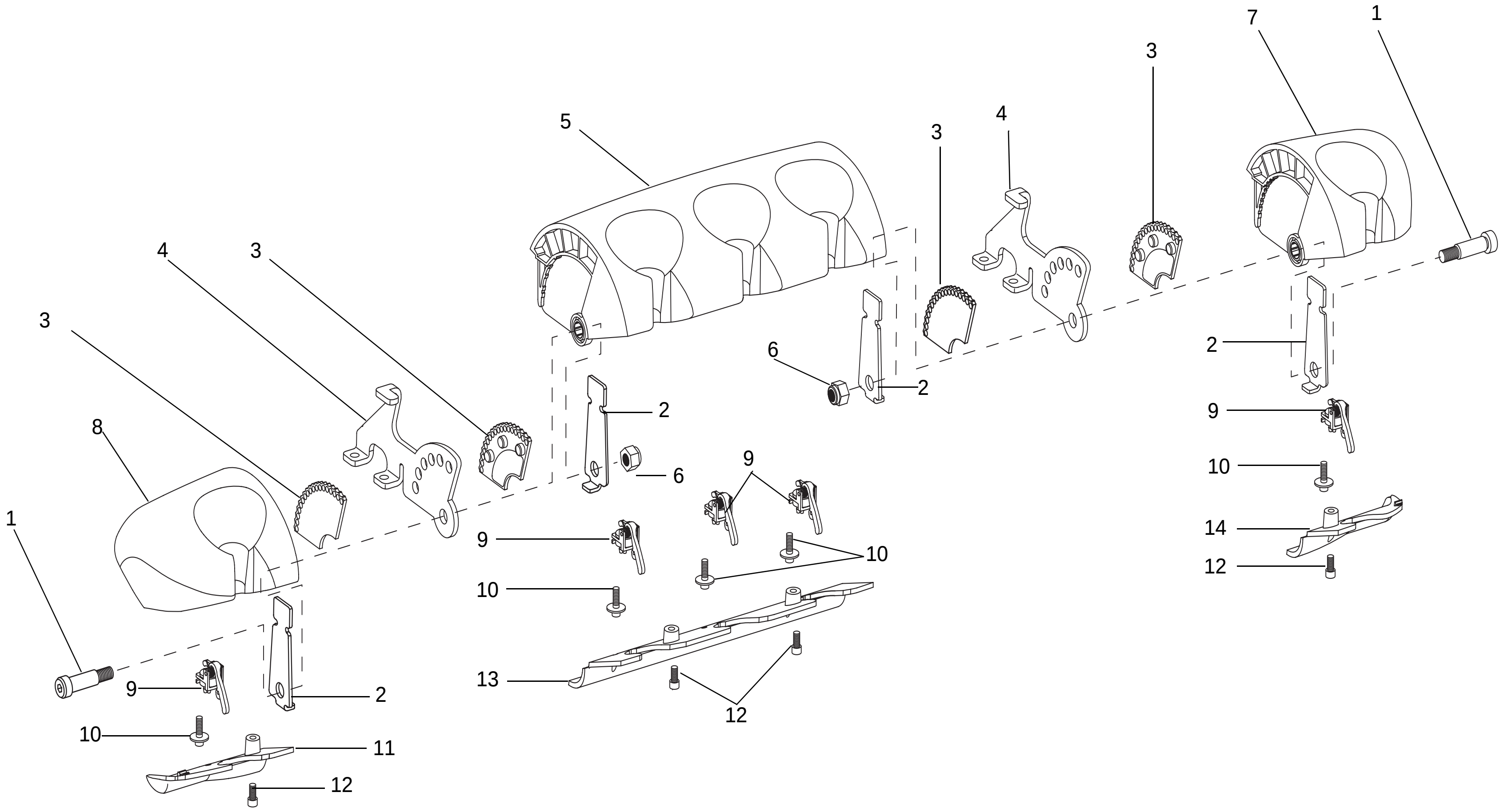
Figure 57 **Control Head**


1
2
3
16
4
17
5
18
11
12
9
14
3
22 or 23
8
9
15
6
19
3
20
8
9
7
19
9
13
10

Traditional Holder Assembly

Item	**Part Number**	**Description**
1	005.164.00	Screw, socket shoulder, 1/4-20 x 5/16 x 3/4 L
2	77.0237.00	Bracket, spring holder, Traditional
3	77.0078.00	Wheel, indexing, Traditional
4	77.0164.00	Bracket, support, Traditional
5	77.0072.00	Cover, nose, Traditional
6	006.052.00	Nut, lock, 1/4-20 x 7/16 x 5/16
7	77.0074.00	Holder, right, Traditional
8	77.0073.00	Holder, left, Traditional
9	99.0654.00	Actuator valve assembly
10	005.161.00	Screw, socket head, 6-32 x 5/8 with washer, stainless steel
11	77.0162.00	Cover, left, lower nose, Traditional
12	001.033.00	Screw, socket head, 6-32 x 3/8, stainless steel
13	77.0076.00	Cover, lower nose, Traditional
14	77.0077.00	Cover, right, lower nose, Traditional

Figure 58 **Traditional Holder Assembly**


7
1
3
5
3
4
4
3
3
6
2
2
2
8
6
9
9
1
9
10
10
10
14
12
13
12
9
2
10
11
12

CHAIR/SIDE SYSTEMS COMMON FEATURES

The A-dec 500 side-mounted and chair-mounted systems have common a common control head, with the same design and internal components. For information on features common to all A-dec 500 delivery systems, see page 105.

CHAIR/SIDE COMMON FEATURES SYSTEM CONTENTS

- **Product Overview, page 116**
- **Adjustments/Maintenance, page 118**

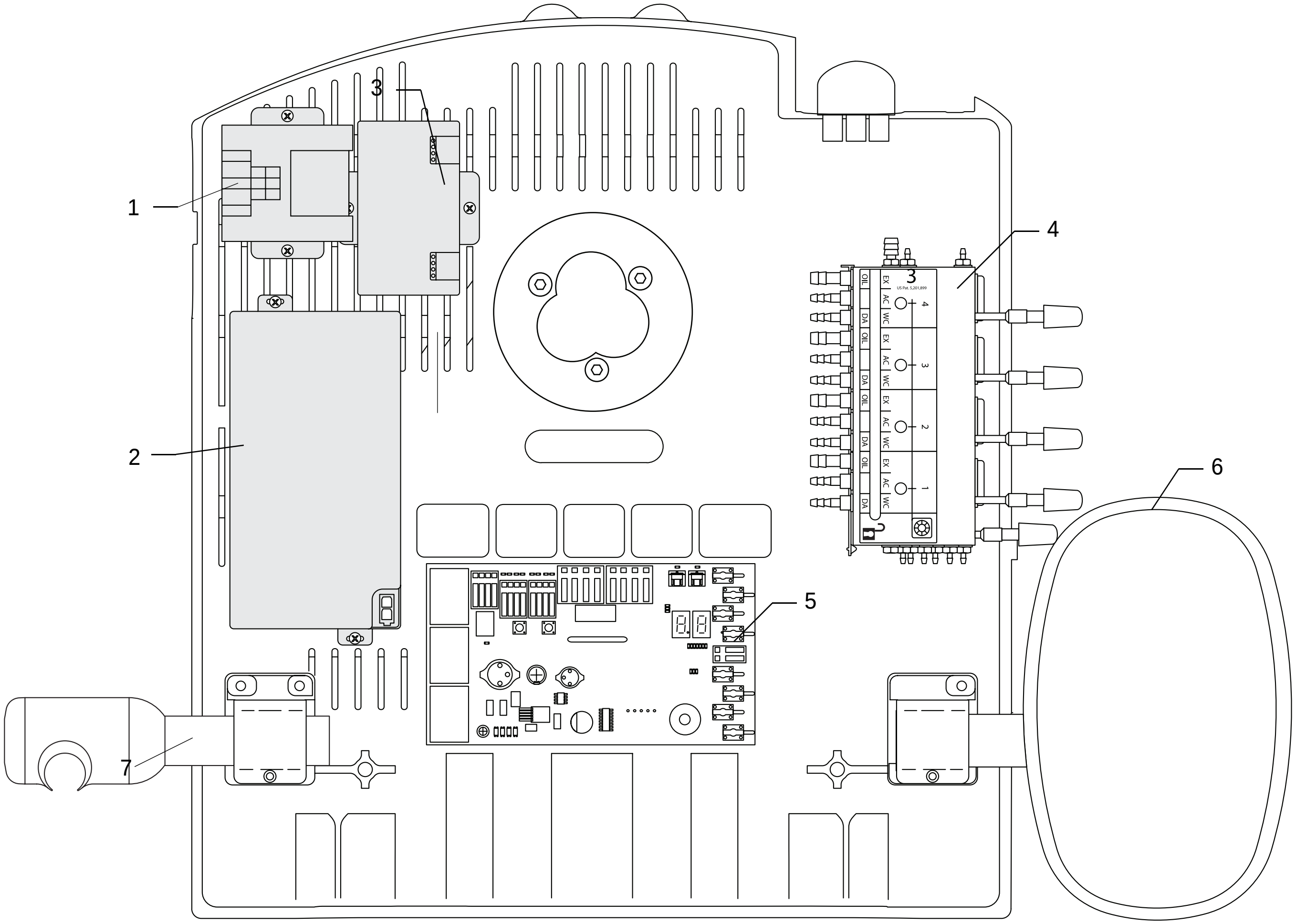
PRODUCT OVERVIEW (CHAIR/SIDE DELIVERY COMMON FEATURES)

Internal Control Components

The A-dec 532/533/542 delivery systems feature a structural platform in the base of the control head. This metal mounting grid allows easy attachment of component parts and extra control modules required by accessories.

Item	Description
1	Scaler control module
2	Electric micromotor control module
3	Curing light control module
4	Control block
5	Delivery system circuit board
6	Touchpad
7	Accessory holder

Figure 59 **Internal Control Components Mounted on the Structural Platform**


3
1
4
3
2
6
5
7
OIL
EX
AC
WC
DA
4
3
2
1

ADJUSTMENTS

Covers

The delivery system covers are designed for easy access to control components.

Remove Delivery System Cover

To remove the delivery system cover:

1. Lift up on the tabs at the back (center) and on both sides of the delivery system cover and open the cover (see Figure 60).
2. Pinch the hinge brackets at the cover base to remove the cover.

Item	Description
1	Tab
2	Delivery system cover
3	Screw
4	Delivery system front cover

Remove Delivery System Front Cover

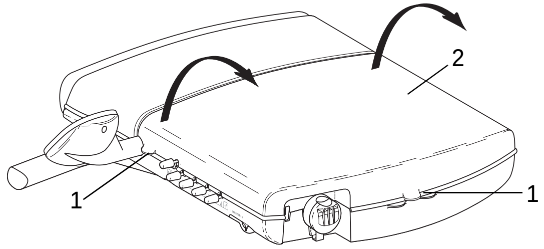
To remove the delivery system front cover:

1. Remove the two screws holding the delivery system front cover in place (see Figure 60).
2. Slide the front cover forward and lift up.

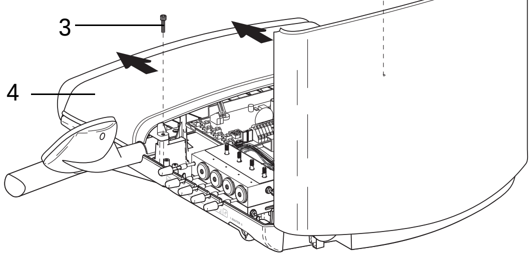
CAUTION Remove handpieces from the delivery system before opening the delivery system front cover.

Figure 60 **Steps For Removing The Covers From 532 and 542 Traditional Delivery System**

1) Lift on tabs and open cover.



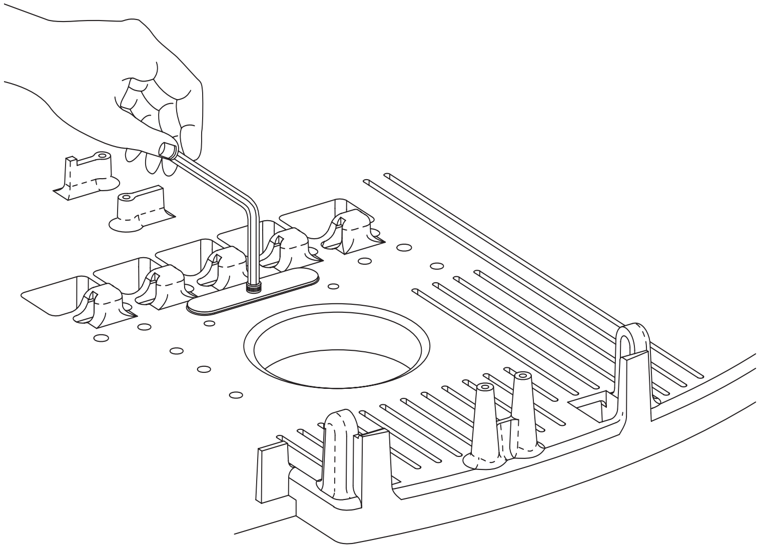
2) Remove screws, slide front cover forward and lift up.



Rotational Tension Adjustment

Tighten or loosen the friction adjustment screw located in the center of the delivery system structural platform to adjust the rotational tension.

Figure 61 Adjusting the Delivery System Rotation Tension



12 O'CLOCK DELIVERY SYSTEMS

The A-dec 500 12 O'clock system features two models, the A-dec 541 Duo Delivery and the A-dec 545 Assistant's Instrumentation. Both models are floor-mounted delivery systems that install with a variety of Preference Collection® and Preference Slimline cabinets. The A-dec 500 standard configuration for both Model 541 and 545 has:

- Height-adjustable round worksurface
- Multi-position assistant's instrument holder
- Autoclavable saliva ejector
- Autoclavable syringe (option of warm water syringe)
- Autoclavable HVE (choice of single/dual)
- 2-liter self-contained water system with quick-disconnect water bottle
- Solids collector
- No touchpad (optional), standard multi-function touchpad (optional) or deluxe multi-function touchpad (optional)

In addition to the Assistant's Instrumentation features, the A-dec Model 541 Duo Delivery System also has:

- Four handpiece control block positions
- Control center with room to house integrated ancillary equipment
- Multi-voltage intraoral light source
- Wet/dry foot control with chip blower/accessory button
- Height-adjustable, multi-position doctor's instrument holder

Optional tray and instrumentation holders are available. Both mount on the round worksurface.

12 O'CLOCK SYSTEM CONTENTS

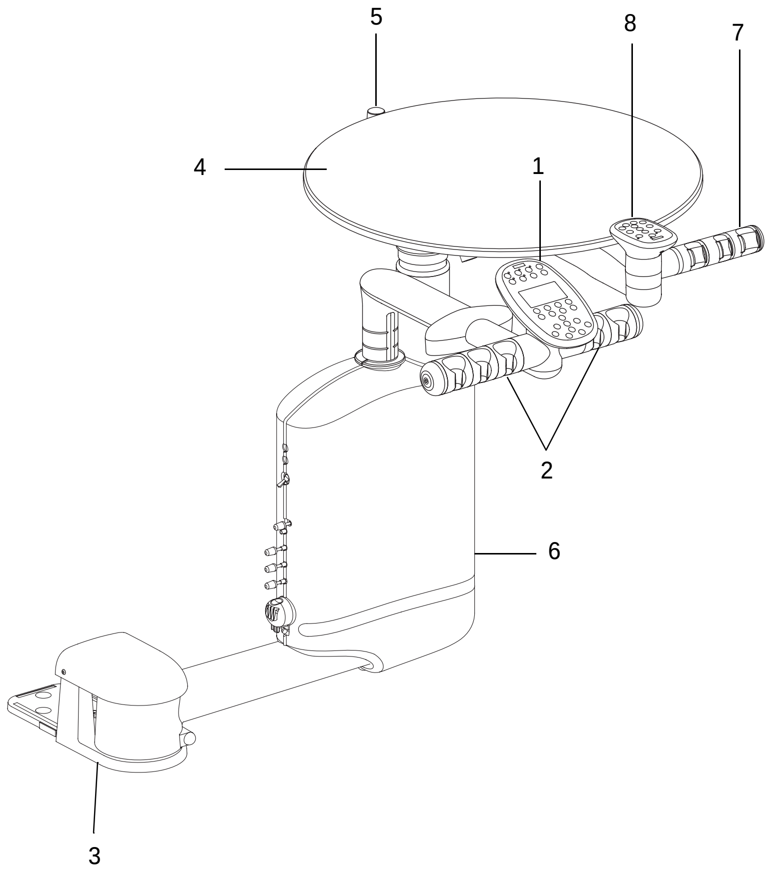
- **Product Overview, page 122**
- **Flow Diagrams, page 128**
- **Service/Usage Information, page 125**
- **Adjustments/Maintenance, page 130**
- **Illustrated Parts Breakdown, page 135**

PRODUCT OVERVIEW (12 O'CLOCK)

A-dec 541 12 O'Clock Duo Delivery System

Item	Description
1	Doctor's touchpad (Deluxe touchpad)
2	Doctors instrumentation
3	Hub mount
4	Round worksurface
5	Tray holder mount
6	Control center
7	Assistant's holder (standard)
—	Assistant's holder (electric)
8	Assistant's touchpad

Figure 62 **Delivery System Components - 541**

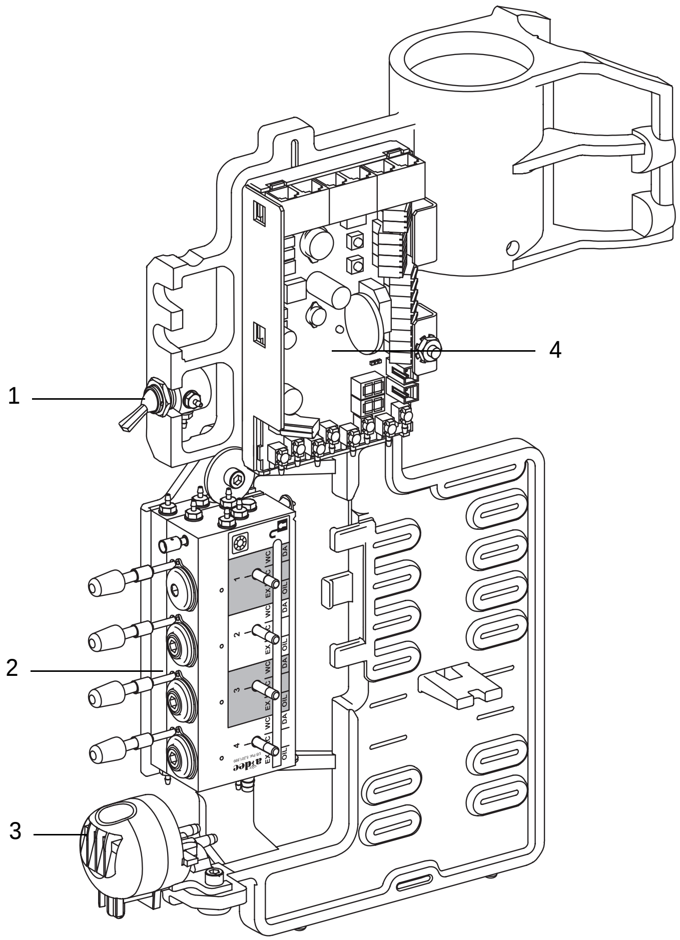


A-dec 541 Internal Components

Item	Description
1	Flush toggle
2	Control block
3	Oil collector
4	Control center circuit board

NOTE For information on the master On/Off toggle, refer to "Master On/Off Toggle" on page 186.

Figure 63 **Internal Components - 541**



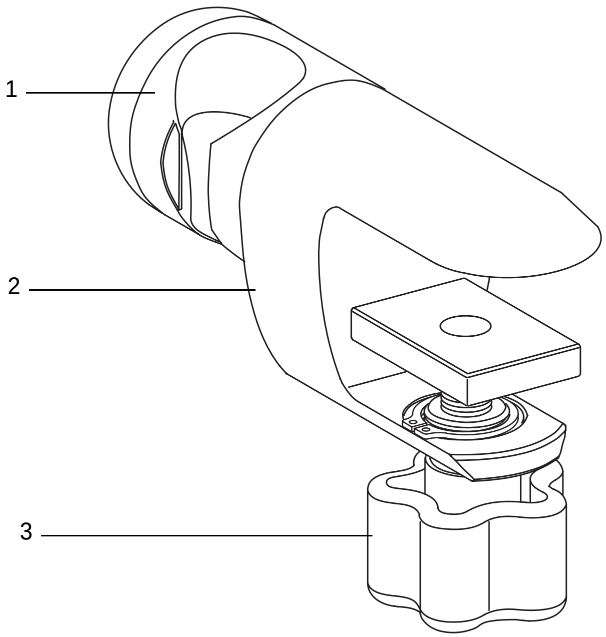
Flex-Holder

Part No: 99.0705.00 (Syringe/Saliva Ejector)
Part No: 99.0706.00 (Standard HVE)
Part No: 99.0707.00 (15 mm HVE)

The flex-holder can mount to a variety of worksurfaces. The mounting location versatility allows you to locate an additional holder where you need it.

Item	Description
1	Holder assembly
2	Clamp
3	Knob

Figure 64 **Flex-Holder**



Control Center Covers (541)

Item	Description
1	Doctor's cover assembly
2	Doctor's cover assembly
3	Opening for cover removal

Some of the adjustments to the 541 duo delivery require the removal of the covers.

Remove Covers

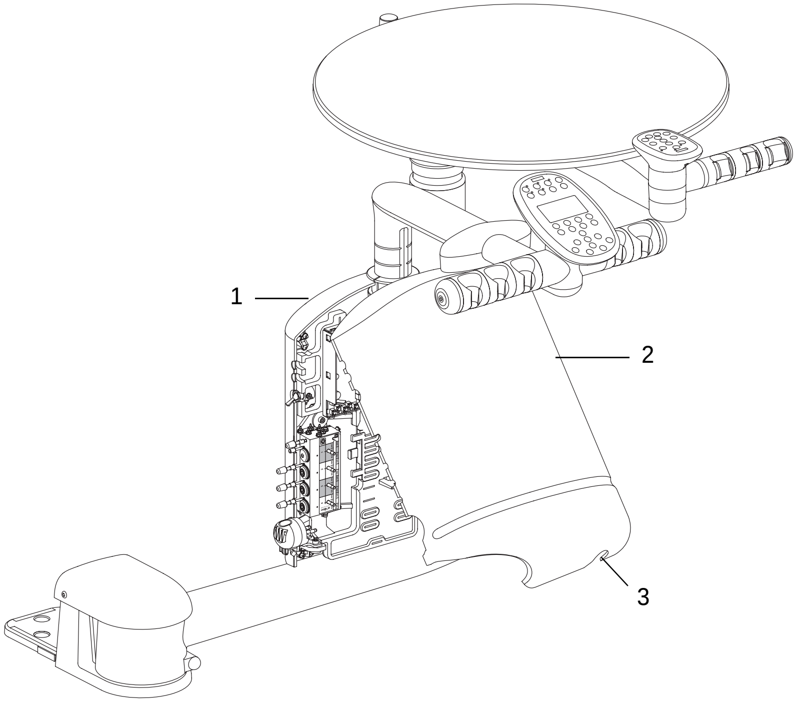
1. Locate the hole directly under the control center.
2. Pull the covers apart.

Replace Covers

1. Position a cover over the control center.
2. Snap in place.
3. Position the other cover and snap the two covers together.

NOTE Make sure the umbilical tubing is contained inside the covers and not pinched.

Figure 65 **Control Center Cover Removal**



Doctor's Holder

The doctor's holder is a configurable design. The holder configurations available from A-dec are:

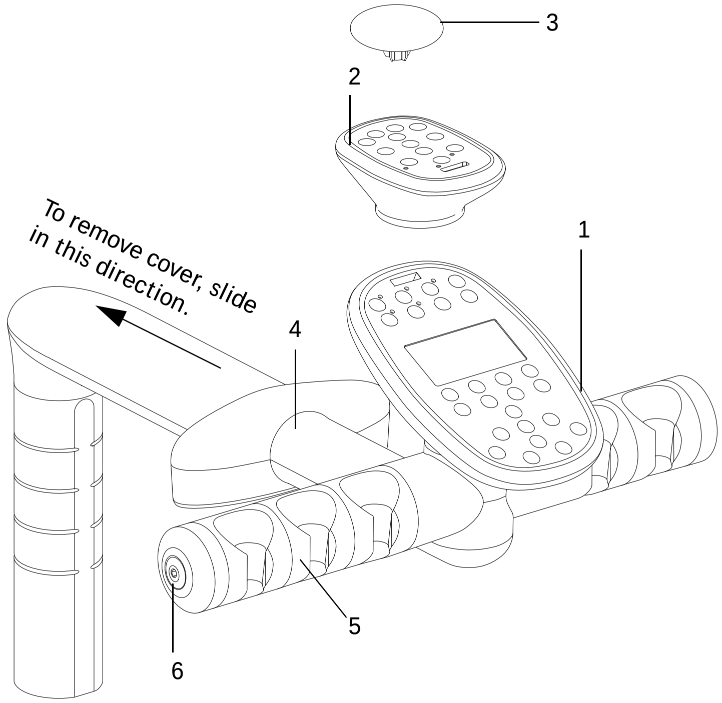
- Two on the left side of the rotation hub and three on the right, syringe at left-most position
- Three on the left side of the rotation hub and two on the right, syringe at right-most position

The holders use a pneumatic A-dec 500 microvalve for handpiece activation. The microvalve located in the syringe position is unplumbed and can be used as a replacement valve. A maximum of four valves connect to the holdback air system on the control block. These valves can be locked out or activated as needed.

The top cover of the 541 arm assembly is easily removed by sliding it backwards and lifting off.

CAUTION Do not pinch any wires or tubings when reinstalling the cover.

Figure 66 Doctor's Holder Assembly

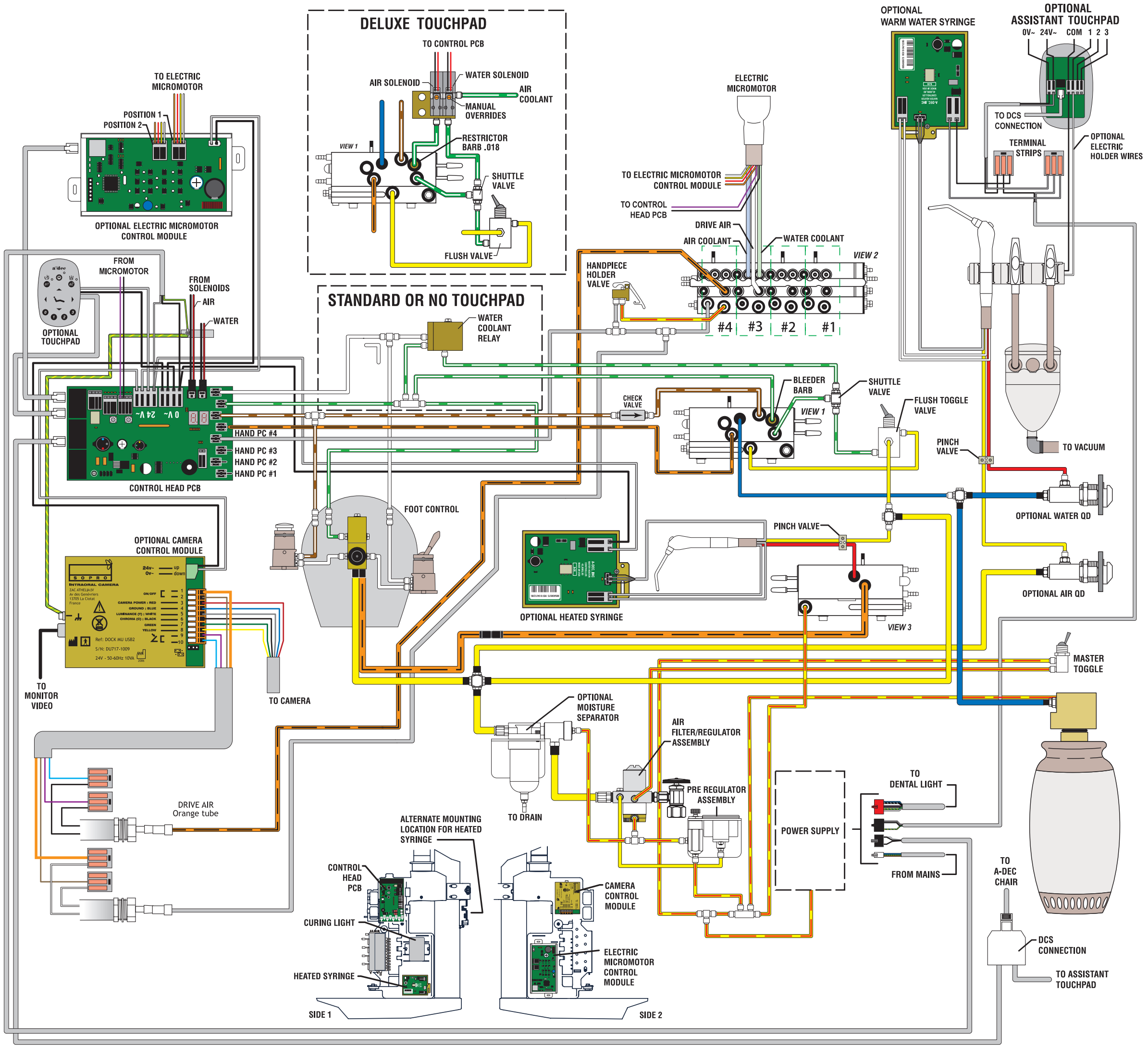


Item	Description
1	Deluxe touchpad option
2	Standard touchpad option
3	No touchpad option
4	541 arm assembly
5	541 holder assembly
6	End cap

FLOW DIAGRAMS

This section contains both plumbing and electrical flow diagrams for the 541 12 o'clock delivery system. They can be referenced for troubleshooting or servicing. Refer also to the cover flow diagram which can be found on the inside cover of the delivery system control center.

Figure 67 541 Plumbing and Wiring Flow Diagram


DELUXE TOUCHPAD
TO CONTROL PCB
AIR SOLENOID
WATER SOLENOID
AIR COOLANT
MANUAL OVERRIDES
RESTRICTOR BARB .018
VIEW 1
SHUTTLE VALVE
FLUSH VALVE
STANDARD OR NO TOUCHPAD
WATER COOLANT RELAY
TO ELECTRIC MICROMOTOR
POSITION 1
POSITION 2
OPTIONAL ELECTRIC MICROMOTOR CONTROL MODULE
FROM MICROMOTOR
FROM SOLENOIDS
AIR
WATER
OPTIONAL TOUCHPAD
24 V~
0 V~
HAND PC #4
HAND PC #3
HAND PC #2
HAND PC #1
CONTROL HEAD PCB
OPTIONAL CAMERA CONTROL MODULE
TO MONITOR VIDEO
TO CAMERA
DRIVE AIR
Orange tube
FOOT CONTROL
OPTIONAL HEATED SYRINGE
ELECTRIC MICROMOTOR
TO ELECTRIC MICROMOTOR CONTROL MODULE
TO CONTROL HEAD PCB
DRIVE AIR
AIR COOLANT
WATER COOLANT
HANDPIECE HOLDER VALVE
VIEW 2
#4
#3
#2
#1
CHECK VALVE
BLEEDER BARB
VIEW 1
SHUTTLE VALVE
FLUSH TOGGLE VALVE
PINCH VALVE
OPTIONAL WARM WATER SYRINGE
OPTIONAL ASSISTANT TOUCHPAD
0V~ 24V~ COM 1 2 3
TO DCS CONNECTION
TERMINAL STRIPS
OPTIONAL ELECTRIC HOLDER WIRES
TO VACUUM
OPTIONAL WATER QD
PINCH VALVE
VIEW 3
OPTIONAL AIR QD
MASTER TOGGLE
OPTIONAL MOISTURE SEPARATOR
TO DRAIN
AIR FILTER/REGULATOR ASSEMBLY
PRE REGULATOR ASSEMBLY
POWER SUPPLY
TO DENTAL LIGHT
FROM MAINS
TO A-DEC CHAIR
DCS CONNECTION
TO ASSISTANT TOUCHPAD
ALTERNATE MOUNTING LOCATION FOR HEATED SYRINGE
CONTROL HEAD PCB
CURING LIGHT
HEATED SYRINGE
SIDE 1
CAMERA CONTROL MODULE
ELECTRIC MICROMOTOR CONTROL MODULE
SIDE 2

ADJUSTMENTS/MAINTENANCE

Level the Arm Assembly and Worksurface

Level the Arm Assembly Front To Back

1. Position the arm perpendicular to the cabinet (see Figure 68).

NOTE Make sure the arm assembly is in line with the worksurface and perpendicular to the cabinet before leveling

2. Place the level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary.

TIP The support arm balances on a pivot. To raise or lower the long side of the arm, adjust the screw nearest the cabinet (see Figure 70). Once the arm is level, tighten the second screw to hold the arm in place.

Level the Arm Assembly Side To Side

1. Position the arm parallel to the cabinet (see Figure 69).
2. Place level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary (see Figure 70).

Figure 68 **Leveling - Arm Assembly Leveling Front to Back**

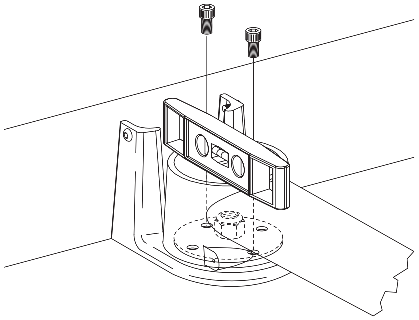


Figure 69 **Adjustment - Arm Assembly Leveling Side to Side**

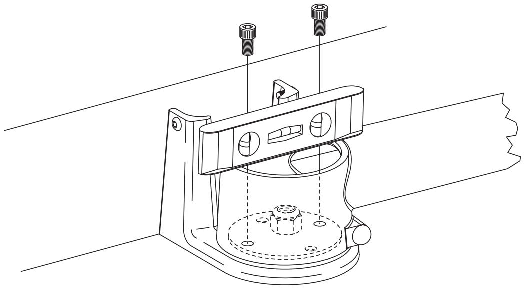
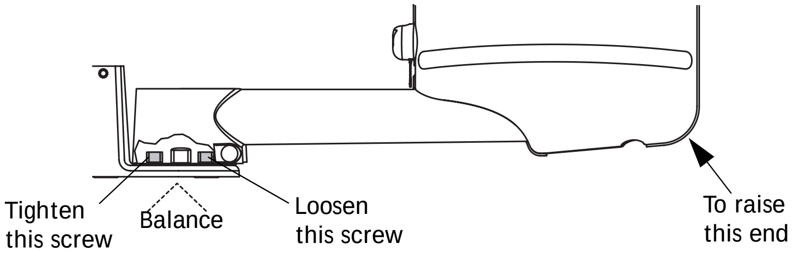


Figure 70 **Level the Hub**



Level Round Worksurface

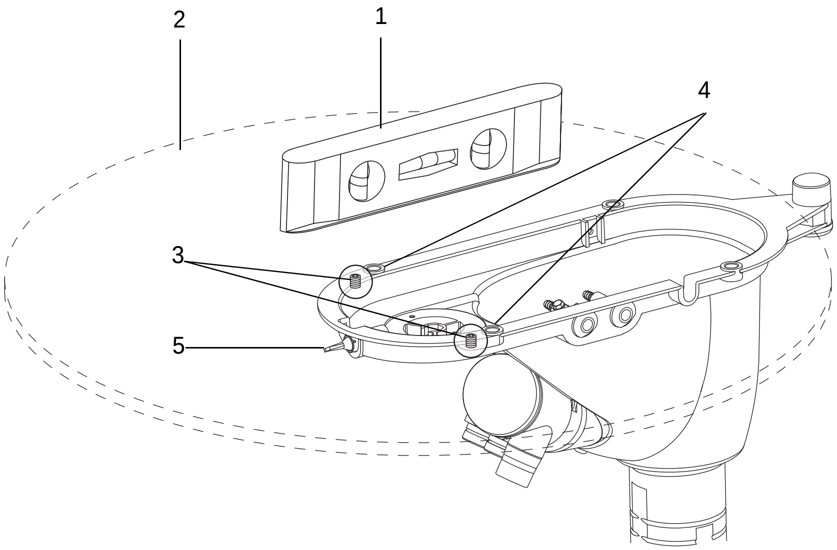
To level the round worksurface, adjust the two set screws in the worksurface support housing (see Figure 71) until the surface is level.

NOTE Ensure that the arm assembly is level before leveling the worksurface.

1. Place the worksurface arm in a typical working position and center a level on the round worksurface over the support housing (see Figure 71).
2. Loosen the worksurface screws on the side nearest the master on/off toggle.
3. Adjust the two setscrews in the worksurface support housing until the surface is level. Use a 1/8" hex key (see Figure 71).
4. Tighten the worksurface screws until the worksurface is secure.

NOTE Do not overtighten the worksurface screws, or the level may change.

Figure 71 **Level Work Surface**



Item	Description
1	Level
2	Worksurface
3	Setscrews
4	Worksurface screws
5	Master on/off toggle

Worksurface Height

Worksurface and Instrumentation Arm Height

The A-dec 12 O'clock system has an arm you can adjust for efficient operation and comfort. To adjust the height of the worksurface or the instrumentation arm:

1. Lift the upper part of the vertical post.
2. Slide the height adjustment ring to the desired position.
3. Lower the vertical post onto the ring.

NOTE The height adjustment range for the worksurface is 2-1/2" (63.5 mm) and for the doctor's instrumentation arm is 3" (76.2 mm).

.

Item	Description
1	Vertical post of the worksurface
2	Height adjustment ring for worksurface
3	Vertical post of the arm
4	Height adjustment ring for arm

Figure 72 **Worksurface and Doctor's Instruments Height Adjustment - 541**

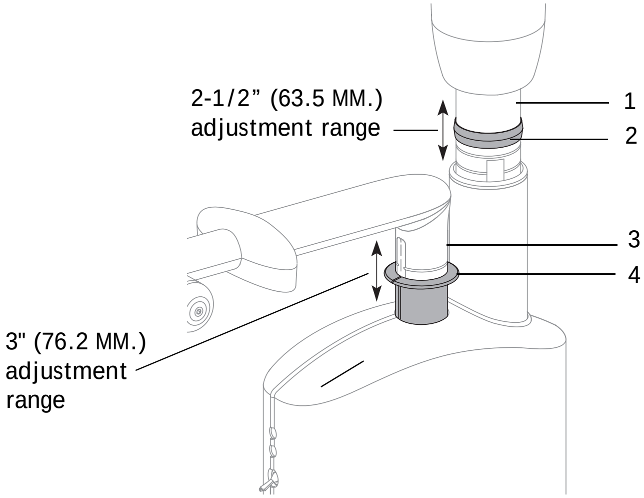
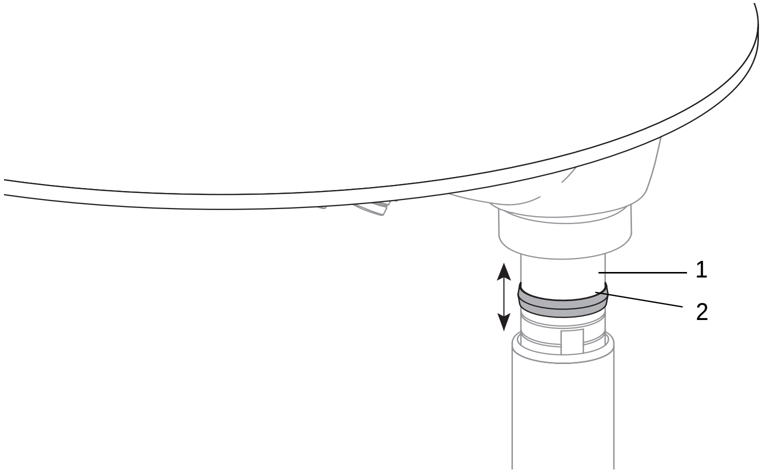


Figure 73 **Worksurface Height Adjustment - 545**



Instrumentation Arm Positioning

The A-dec 500 instrumentation holders offer horizontal and vertical positioning. Each holder rotates for independent angle adjustment.

Position Holders

You can customize the position of each holder on the holder assembly arm:

1. Pull holder slightly away from the adjacent holder.
2. Twist to the desired position and release (see Figure 75).

NOTE Doctor's and assistant's holders adjust in the same manner.

Figure 74 **Instrumentation Arm Positioning**

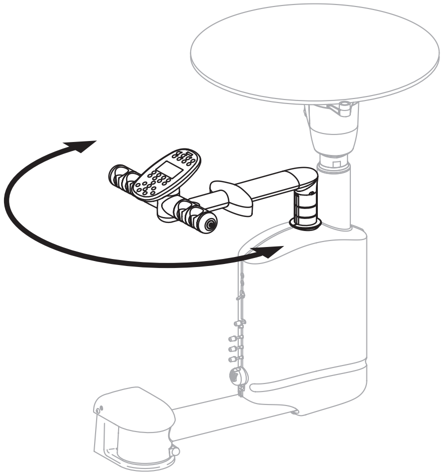
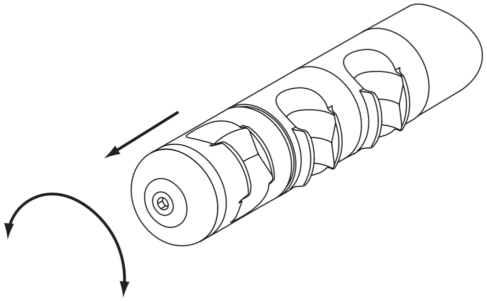


Figure 75 **Instrument Holder Positioning**



Holder positions rotate independently

ILLUSTRATED PARTS BREAKDOWN (541 AND 545)

This section contains illustrated parts breakdowns specific to the 12 O'clock delivery systems (Models 541 and 545).

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

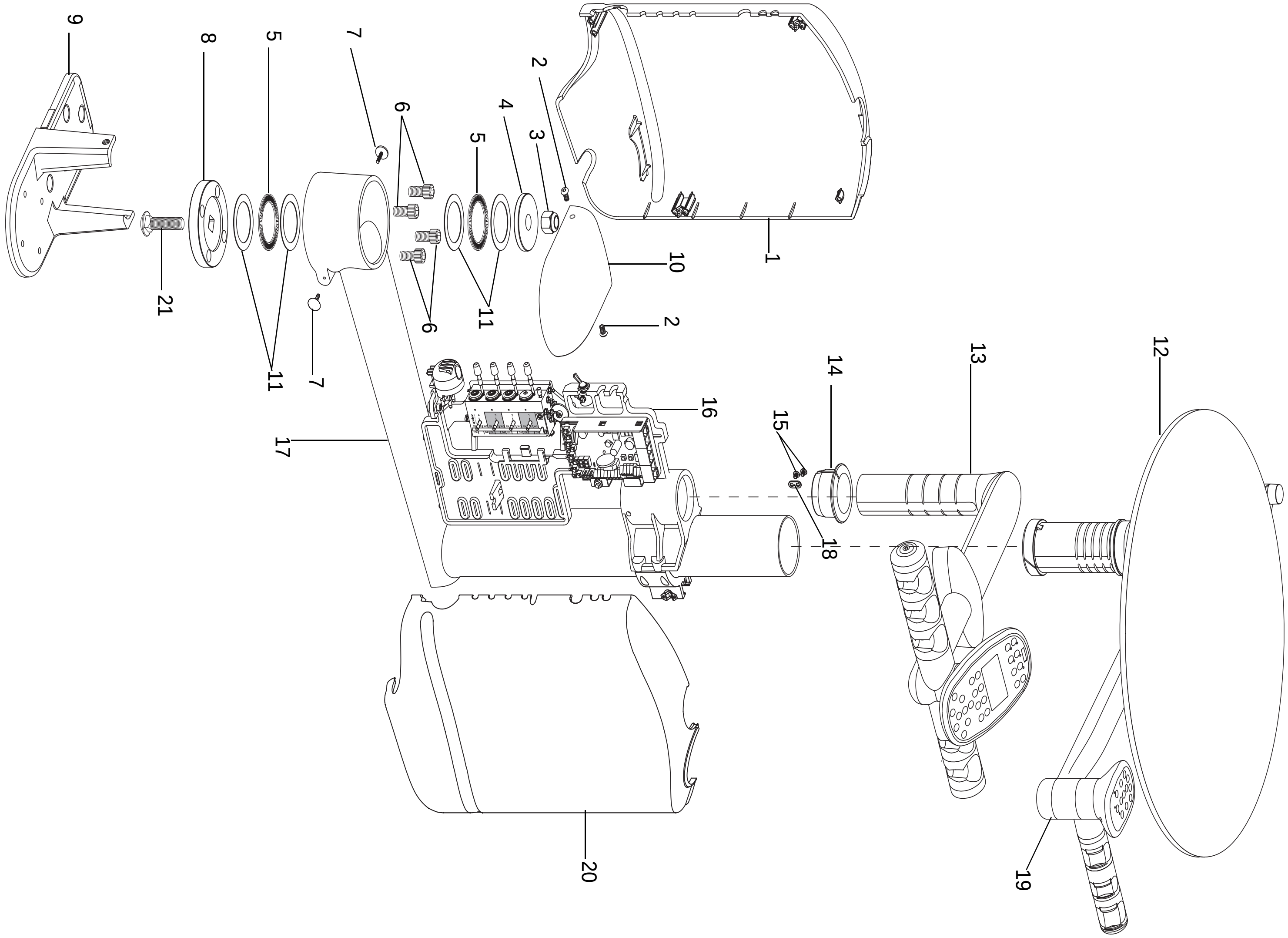
12 O'CLOCK DELIVERY SYSTEMS IPB CONTENTS

- **Duo Delivery System (Model 541), page 136**
- **Worksurface Module, page 138**
- **Mounting Platform Installation, page 140**
- **Control Center, page 142**
- **Doctor's Arm Assembly, page 144**
- **Doctor's Turret, 2" Holder Assembly, page 146**
- **Vacuum and Upper Structure Assembly, page 148**
- **Assistant's Holder—Electric, page 150**
- **Assistant's Holder—Standard, page 152**

Duo Delivery System (Model 541)

Item	Part Number	Description
1	77.0579.00	Right doctor's cover assembly
2	005.002.00	Screw, button socket head 1/4-20 x 5/8
3	006.157.00	Nut, 5/8-11 lock nut, Nylon ins, Zinc
4	77.0407.00	Bearing cap, 12 O'clock arm hub
5	016.044.00	Bearing, thrust, needle 2.0 ID
6	001.225.00	Screw, socket head, 3/8-16 x 3/4, Black
7	017.028.00	Bumper
8	77.0405.00	Gimbal, mount plate
9	77.0482.00	Floor mount, 12 O'clock arm
10	77.0455.00	Cover, hub, 12 O'clock arm
11	016.108.00	Bearing, thrust, race 2.0 ID PLN
12		Worksurface module
13		Doctor's arm
14	77.0428.00	Height adjustment ring, doctor's unit
15	002.094.02	Screw, button head socket, 10-32 x 1/4, stainless steel
16	77.0523.00†	Doctor's control center
17	77.0577.00	12 O'clock support arm/post assembly
18	77.0478.00	Stop washer
19		Assistant's arm
20	77.0578.00	Left doctor's cover assembly
21	005.030.00	Carriage Bolt, 5/8-11 x 2 1/4, ZC

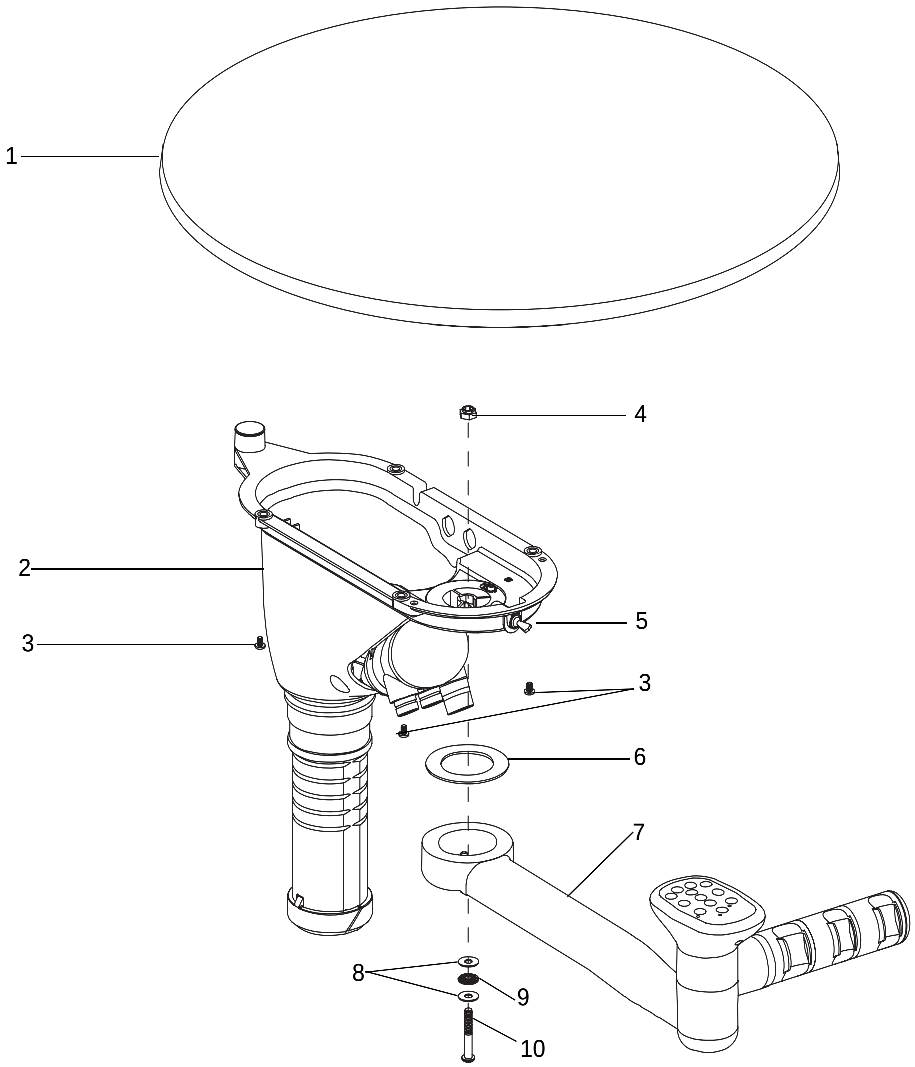
Figure 76 **Duo Delivery System (Model 541)**


9
8
5
7
2
6
4
3
5
1
10
2
21
11
6
11
7
17
16
14
15
13
12
18
20
19

Worksurface Module

Item	Part Number	Description
1		Worksurface
2		Vacuum and upper structure assembly
3	002.094.02	Screw, button head socket, 10-32 x 1/4, stainless steel
4	006.147.00	Nut, lock, 1/4-20
5	33.0048.05	Valve, toggle, 3-way, up left, round, master On/Off
6	77.0408.00	Bearing, assistant's arm assembly
7		Assistant's arm assembly
8	016.053.00	Washer, assistant's arm assembly
9	016.054.00	Thrust needle, bearing, assistant's arm assembly
10	001.112.03	Screw, assistant's arm assembly, 1/4-20 x 1-1/2

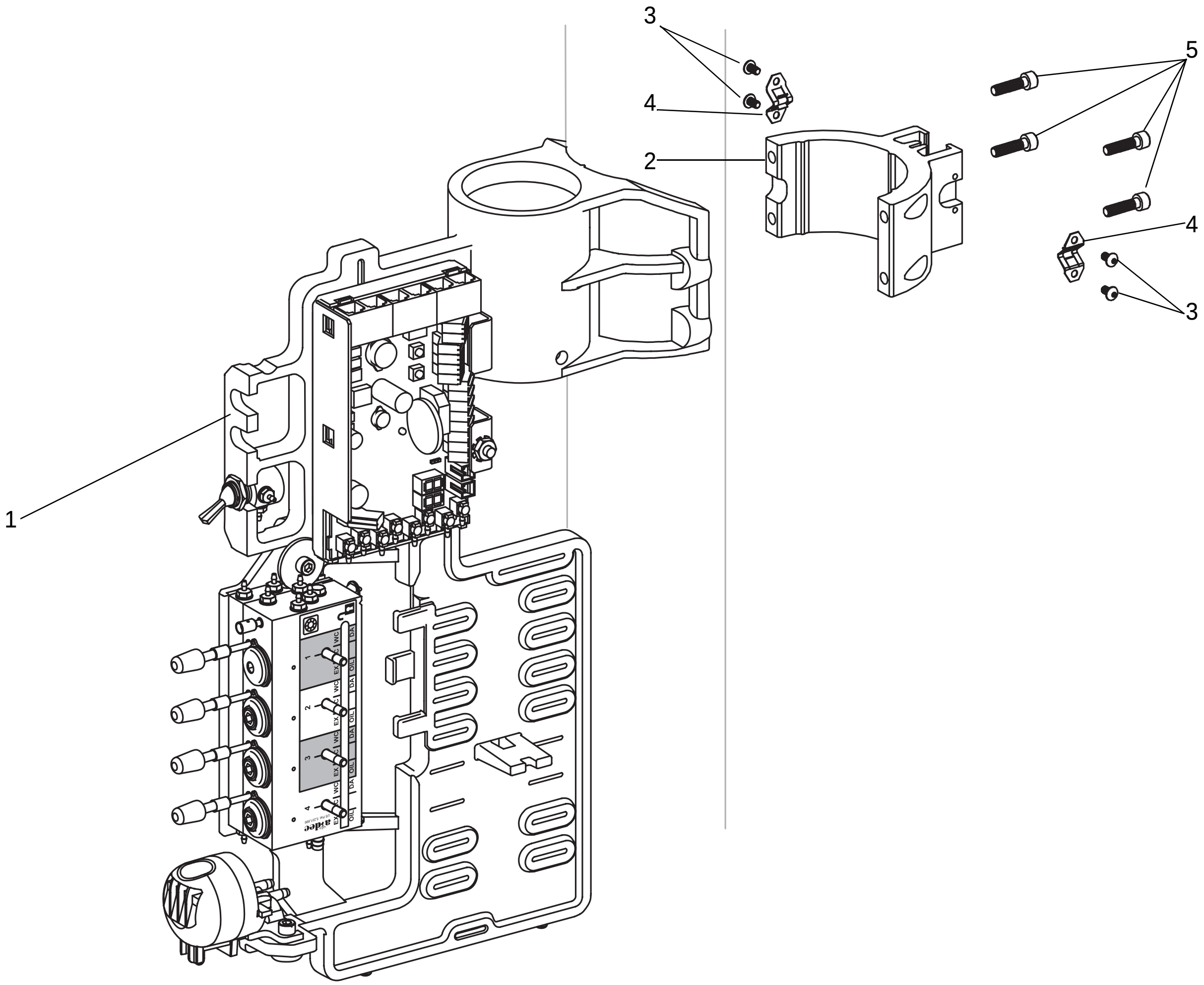
Figure 77 **Worksurface Module**



Mounting Platform Installation

Item	Part Number	Description
1		Control Center
2	77.0431.00	Clamp, extrusion, machined
3	002.140.00	Screw, button head socket, patch, 6-32, Stainless Steel
4	042.221.00	Spring, ball stud
5	002.073.00	Screw, socket head, 10-32 x 3/4

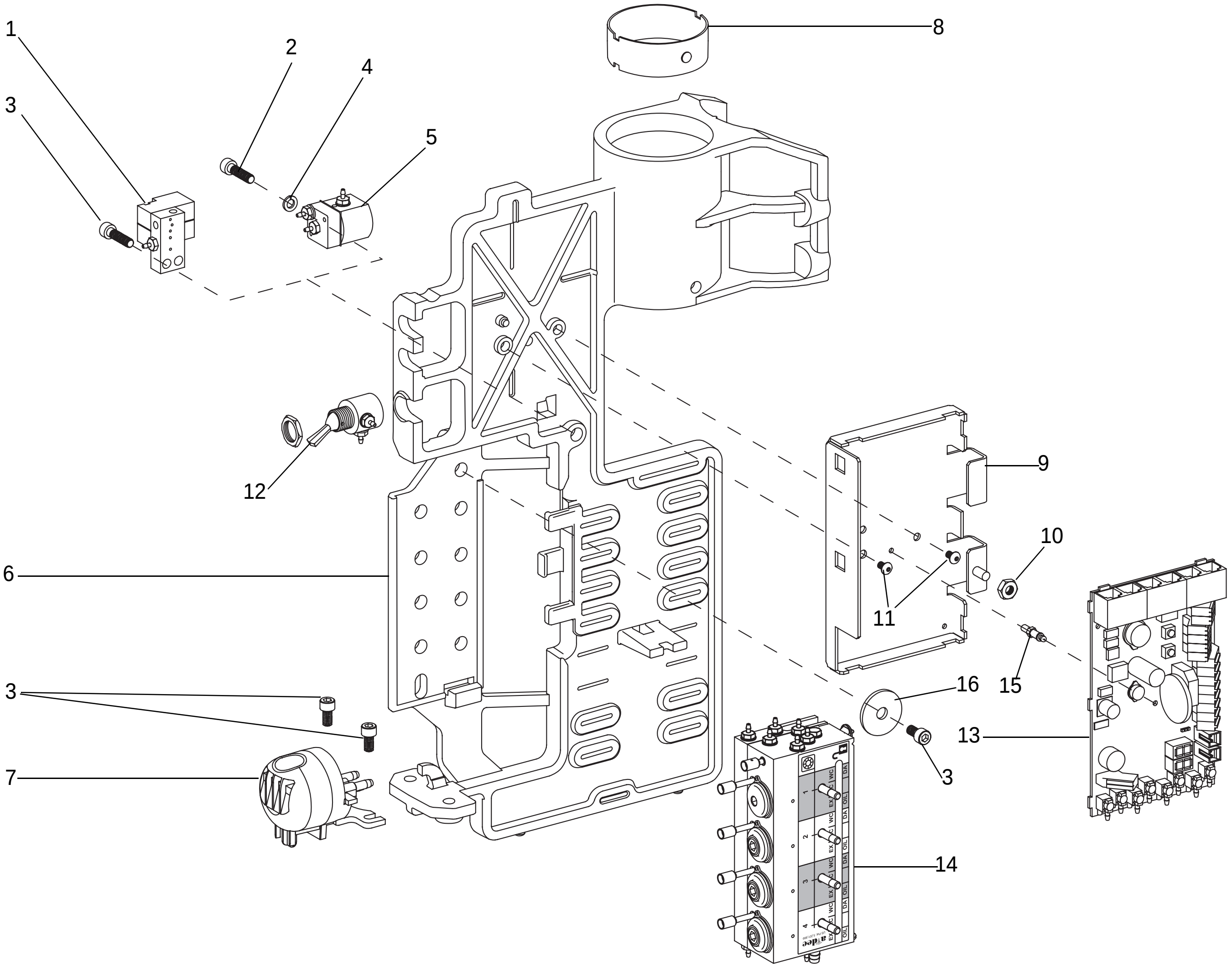
Figure 78 **Mounting Platform Installation**



Control Center

Item	Part Number	Description
1	43.0057.00	Manifold assembly, solenoid, dual (Deluxe touchpad only)
2	002.073.00	Screw, socket head, 10-32 x 3/4
3	002.130.00	Screw, socket head, 10-32 x 3/8
4	004.113.00	Washer, split lock, steel PL #10
5	38.1810.00	Relay assembly, water coolant, air actuated, non-adjustable (standard or no touchpad only)
6	77.0493.00	Frame, unit, 12 O'clock
7	90.1110.00	A-dec 500 oil collector assembly kit
8	77.0429.00†	Lower bushing, doctor's unit — (replace with 77.0493.00)
9	77.0384.00	Tray, printed circuit board mount, control head
10	006.002.00	Grounding nut
11	001.034.00	Screw, allen head socket, patch, 6-32, stainless steel
12	33.0168.00	Valve assembly, 4-way
13	90.1076.00	Circuit board
14	38.1776.00	Control block assembly
15	90.1082.00	Standoff, printed circuit board, plastic, 3/8 H, 6-32 O, package of 5
16	004.156.00	Washer, flat 1.00 OD x.261 ID
—	90.1076.00	Kit, printed circuit board control head, intraoral light source (includes items 14, 16)

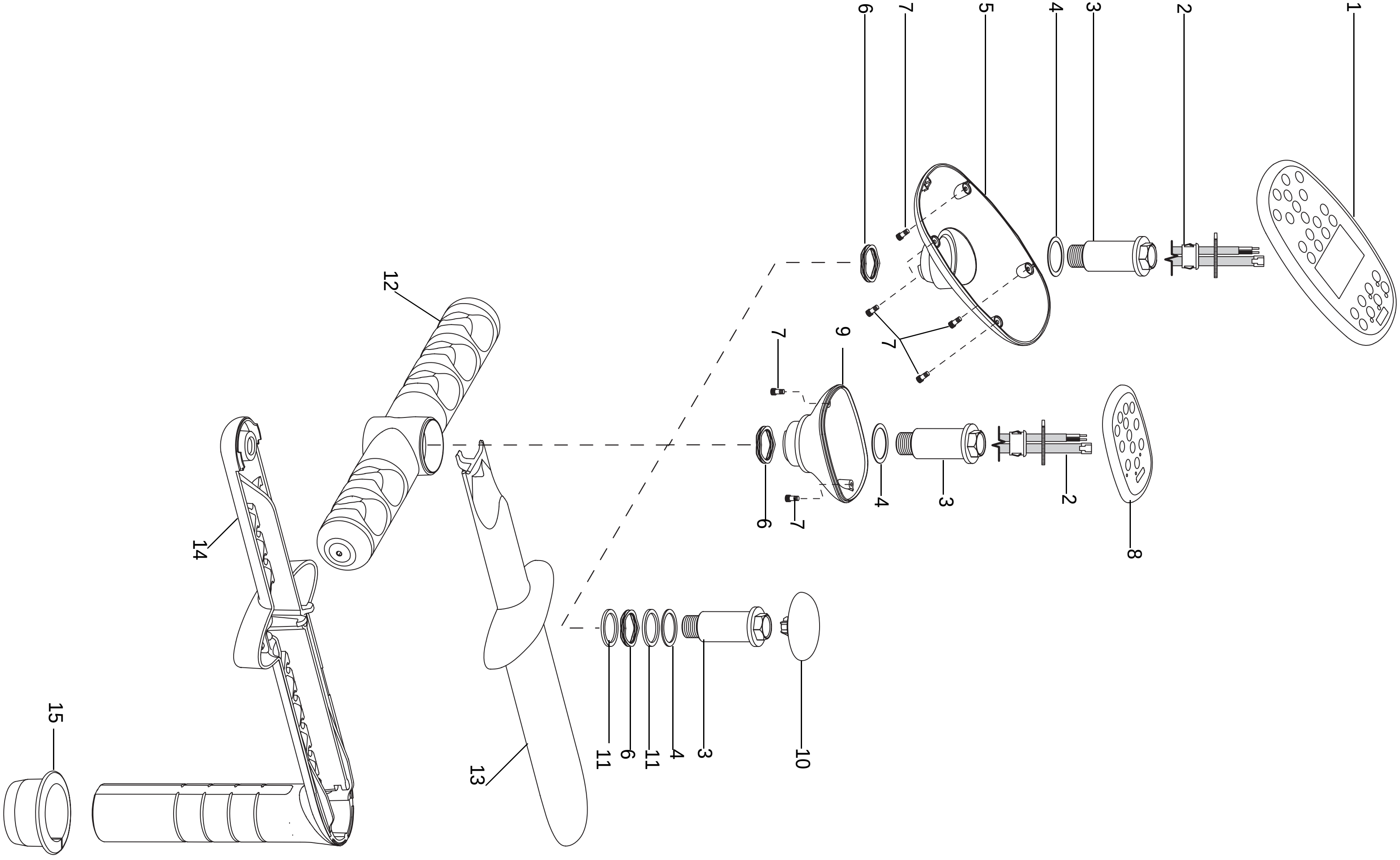
Figure 79 Control Center


1
2
3
4
5
8
9
10
11
12
6
3
7
16
15
13
3
14

Doctor's Arm Assembly

Item	**Part Number**	**Description**
1	90.1135.00	Touchpad module, deluxe
2	041.663.00	Cable bushing, 7/16 ID
3	99.0700.00	Bolt, holder turret, 1 piece
4	004.060.00	Washer, .875 x 1.125 x .020 thick
5	77.0421.00	Base, touchpad, deluxe, 12 O'clock
6	004.237.00	Washer, wave, spring, 1.125 OD
7	003.078.00	Screw, socket head, 4-40 x 1/4
8	90.1078.00	Touchpad kit, standard touchpad
9	77.0335.00	Base, touchpad, standard
10	77.0413.00	Cap, touchpad replacement, assistant's side
11	77.0124.00	Spacer
12		Turret, 2-holder assembly
13	77.0452.00	Cover, arm, 12 O'clock
14	77.0402.01	Arm, doctor's holder, 12 O'clock
15	77.0428.00	Height adjustment ring, doctor's unit

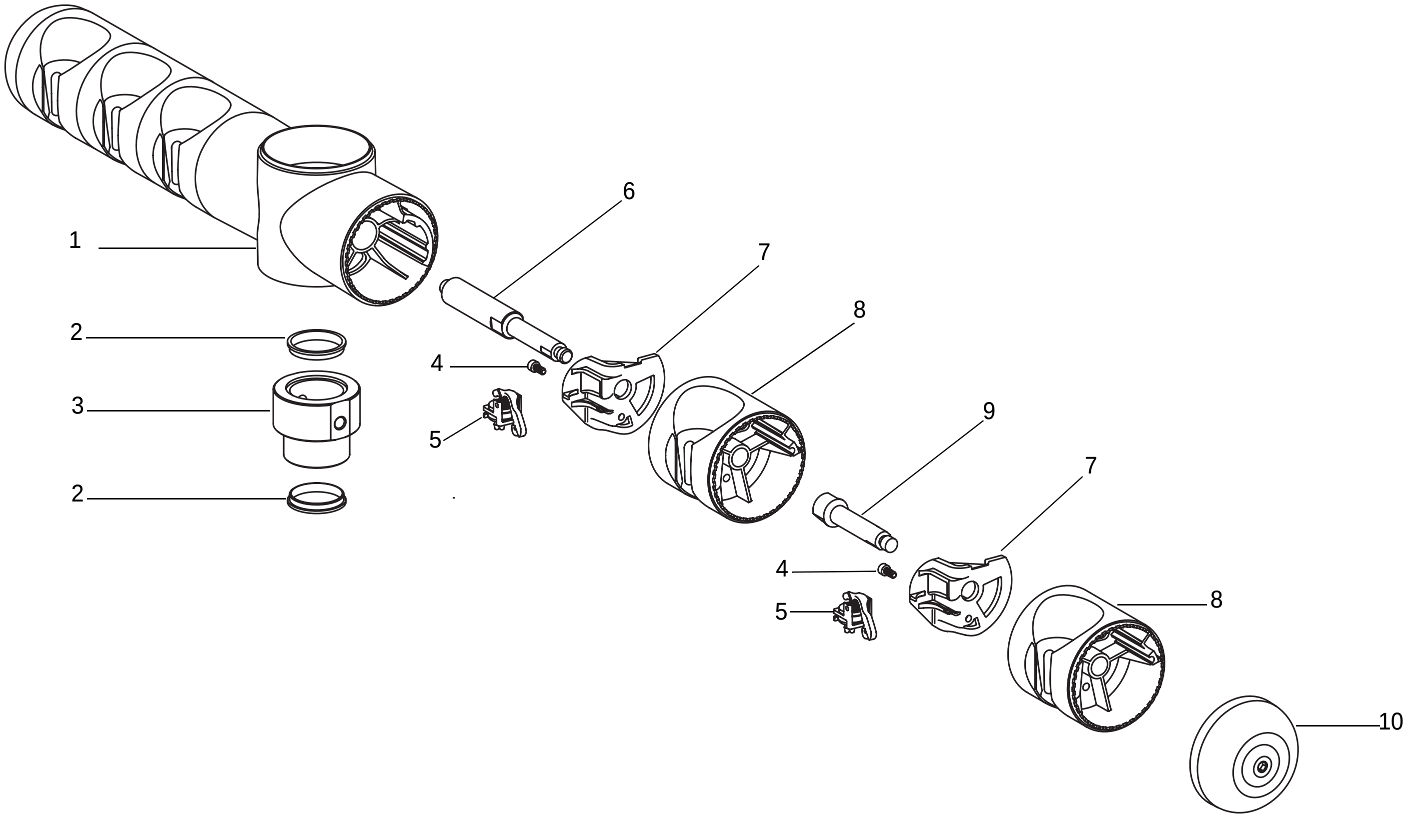
Figure 80 **Doctor's Arm Assembly**


9
7
5
4
3
2
1
12
7
9
7
9
7
4
3
2
8
14
15
13
11
9
11
4
3
10

Doctor’s Turret, 2" Holder Assembly

Item	Part Number	Description
1	99.0690.00	Turret, 2" holder assembly
2	99.0698.00	Bearing, inner hub, assistant’s arm
3	99.0693.00†	Hub, inner turret, 2" holder assembly — (replace with 99.0713.00)
4	003.078.00	Screw, socket head, 4-40 x 1/4, zinc
5	99.0696.00	Actuator valve assembly, 12 O’clock holder
6	99.0701.00	Turret axle, assistant’s arm
7	99.0694.00†	Clip, microvalve, 2" holder — (replace with 99.0711.00)
8	99.0691.00†	Holder, SE/syringe, 2" diameter — (replace with 99.0711.00)
9	99.0660.00†	Axle, holder assembly, assistant’s arm — (replace with 99.0711.00)
10	99.0710.00	End cap, 12 O’clock operator
	99.0711.00	Holder assembly, with valve, 12 O’clock operator (includes items 4, 5, 6, 7, 8, 9)
	99.0713.00	Turret assembly, 12 O’clock operator (includes items 2, 3)

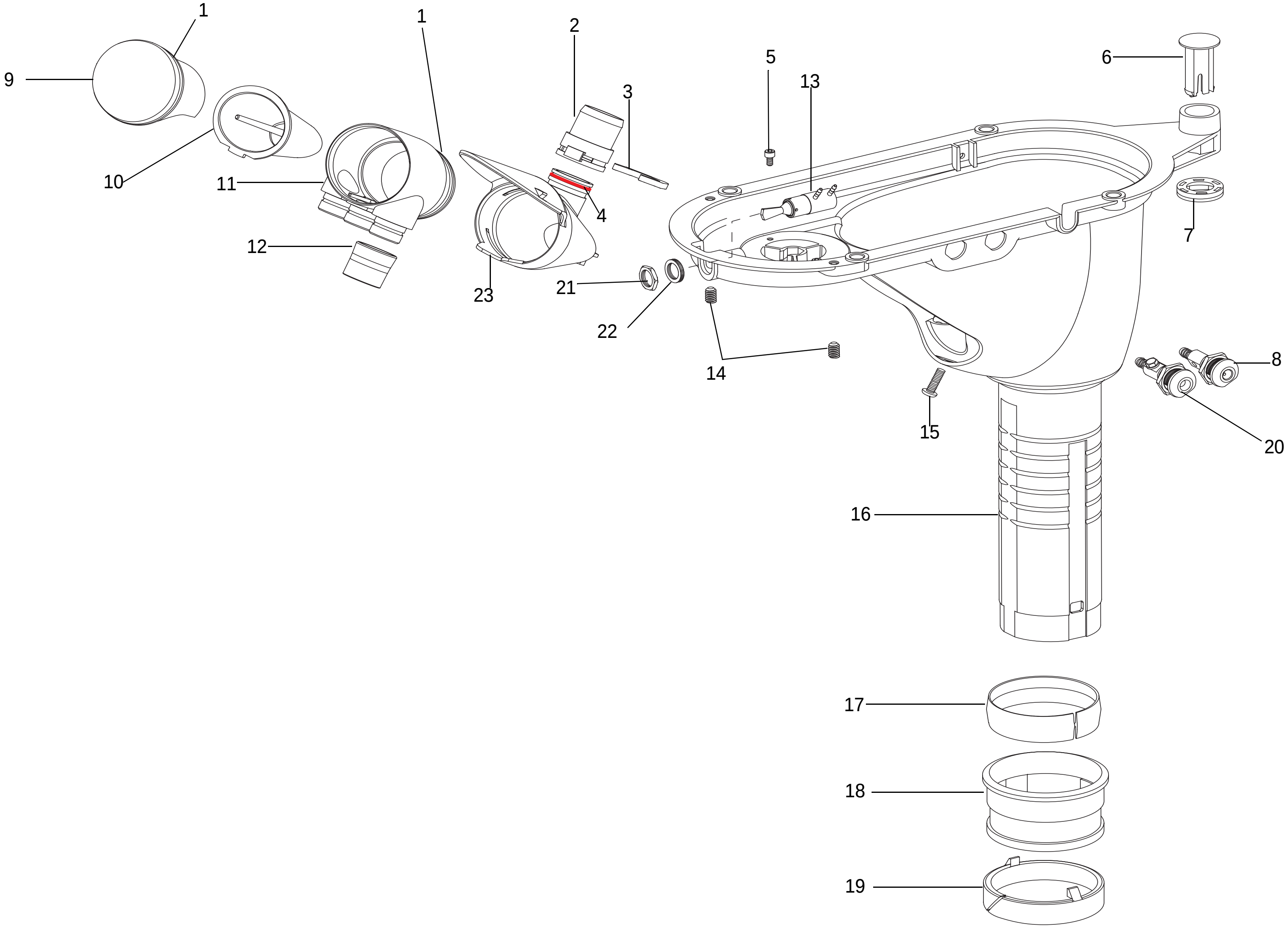
Figure 81 **Doctor's Turret, 2" Holder Assembly**


6
1
7
8
2
4
3
5
2
9
7
4
8
5
10

Vacuum and Upper Structure Assembly

Item	**Part Number**	**Description**
1	030.035.02	O-ring, 2.239 ID x .070 W, package of 10
2	022.094.01	Connector, vacuum, female, 25 mm tubing, with clip
3	022.090.00	Retainer clip, connector vacuum
4	035.053.01	O-ring, silicone, vacuum, 20 mm x 2 mm, package of 10
5	002.094.02	Screw, button head, 6-32 x 1/4
6	77.0542.00	Plug, assistant's support
7	77.0541.00	Bumper, assistant's support
8	026.181.00	QD assembly, self-contained water 5/16, female (optional)
9	77.0254.01	Cap, vacuum tower, with deflector and O-ring
10	11.1284.01	Screen, ellipse, solids trap, package of 10
11	77.0453.00	Connector, tri-vacuum tower, assistant's arm with O-ring
12	11.1280.01	Cap, 15 mm QD
13	33.0048.05	Valve, toggle, 3-way, up left, round, master On/Off
14	007.042.00	Setscrew, socket cup point, 1/4-20 x 3/8
15	005.123.01	Screw, button head socket, 10-32 x 5/8
16	77.0419.01	Assistant's worksurface support
17	77.0415.00	Height adjustment ring
18	77.0417.00	Bushing height adjust-upper
19	77.0416.00	Bushing height adjust-lower
20	026.182.00	QD assembly, female, air, 5/16 (optional)
21	006.009.01	Hex nut, 15/32-32" x 9/16 x 3/32", package of 10
22	006.069.00	Knurl nut, 15/32-32"
23	77.0436.00	Vacuum canister base

Figure 82 **Vacuum and Upper Structure Assembly**


1
1
2
3
5
13
6
9
10
11
12
23
4
21
22
14
7
8
15
20
16
17
18
19

Assistant’s Holder—Electric

	Part Number	**Description**
1	99.0649.00	Turret, holder, assistant’s arm
2	99.0699.00	Inner hub, assistant’s arm
3	99.0701.00	Turret axle. assistant’s arm
4	99.0673.01	Holder, SE electric holder kit
	99.0674.01	Holder, HVE electric holder kit
	99.0675.01	Holder, 15 mm HVE electric holder kit
5	99.0648.01	End cap, holder assembly, assistant’s arm
6	99.0698.00	Bearing, inner hub, assistant’s arm
7	77.0385.00	Stop (only with dual holders), turret rotation
8	77.0125.01†	Head mount, assistant’s arm
9	77.0485.00	Assistant’s Arm
10	77.0283.00	Cap assembly, touchpad, standard
11	77.0123.00	Bolt, holder, turret, 1 piece
12	99.0651.00	Spline, holder assembly, assistant’s arm
13	004.060.00	Washer, .875 x 1.125 x .20 thick
14	77.0335.00	Base, touchpad, assistant’s arm
15	003.078.00	Screw, 4-40 x 1/4, socket head
16	004.173.00	Washer, .875 x 1.125 x .020
17	004.237.00	Washer, wave, spring, 1.125 outer diameter
18	006.121.00	Nut, hex jam, 5/8-18 Grade 5
19	77.0124.00	Spacer, .875 x 1.125 x .75

Figure 83 Assistant's Holder—Electric, Single

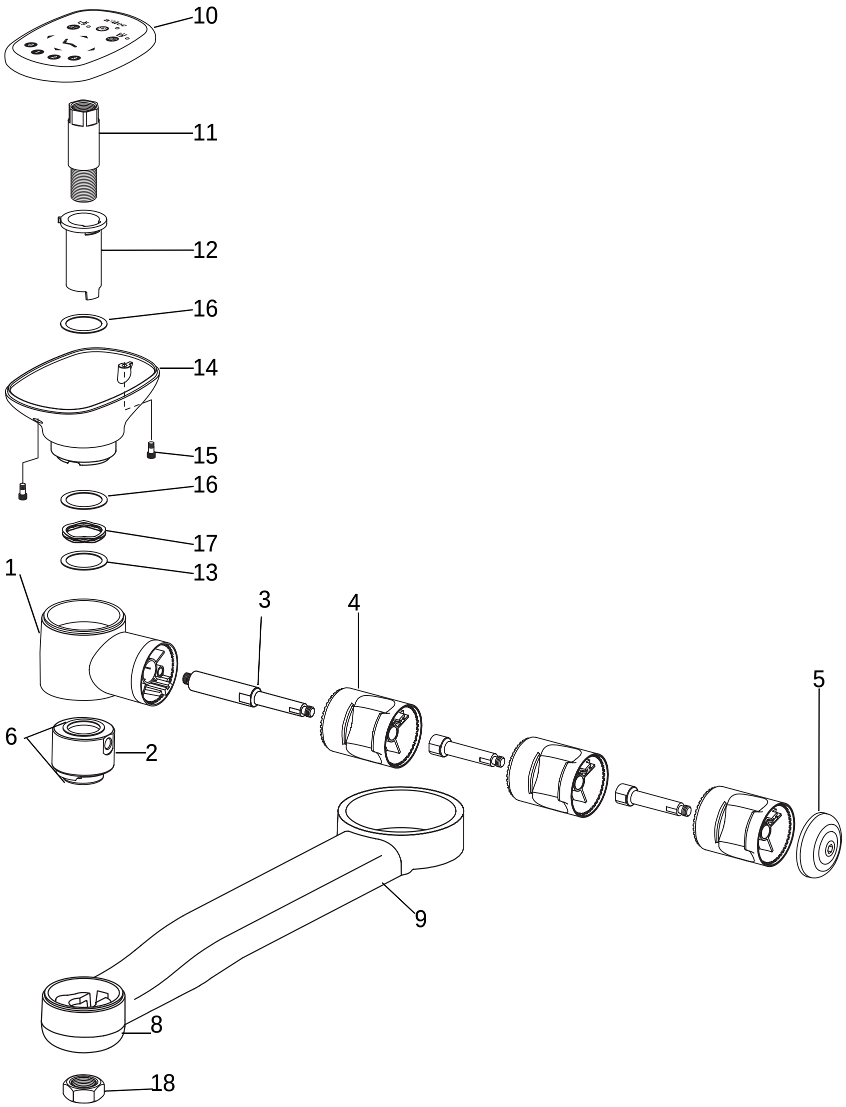
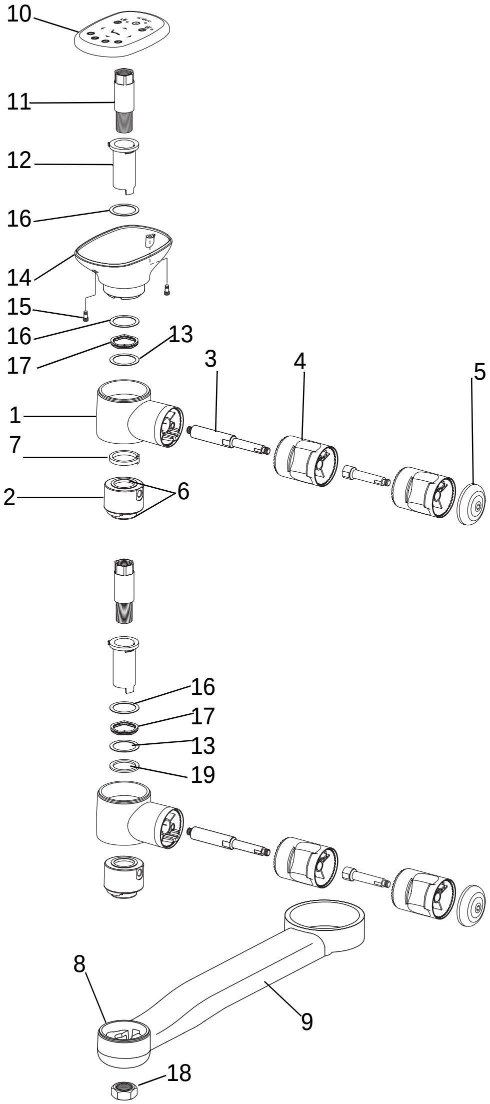

10
11
12
16
14
15
16
17
13
1
3
4
5
6
2
9
8
18

Figure 84 Assistant's Holder—Electric, Dual

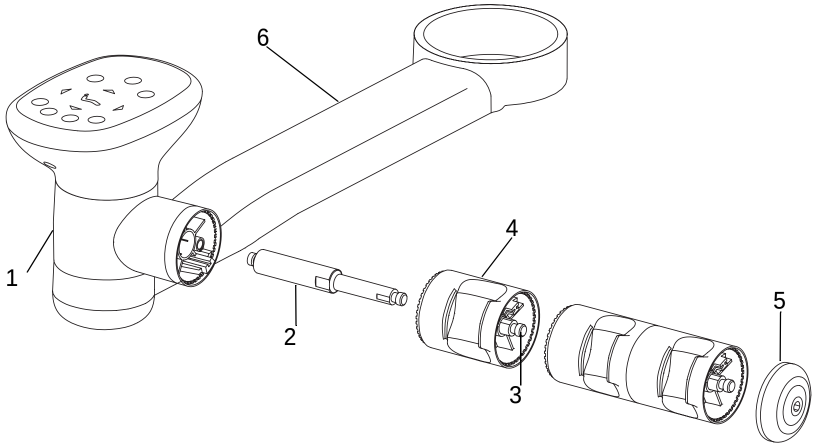

10
11
12
16
14
15
16
17
13
3
4
5
1
7
2
6
16
17
13
19
8
9
18

Assistant's Holder—Standard

The touchpad does not need to be removed when disassembling the standard holder.

Item	Part Number	Description
1	99.0649.00	Turret, holder, assistant's arm
2	99.0701.00	Turret axle, assistant's arm
3	99.0660.00†	Axle, holder assembly, assistant's arm — (replace with 99.0711.00)
4	99.0653.01	Holder, SE, syringe kit
	99.0650.01	Holder, 11 mm, HVE standard kit
	99.0652.00	Holder HVE, 15 mm kit, assistant's arm
5	99.0648.01	End cap, holder assembly, assistant's arm
6	77.0485.00	Assistant's Arm

Figure 85 Assistant's Holder—Standard



A-DEC 500 DELIVERY SYSTEMS COMMON FEATURES

A-dec 500 delivery systems have features in common, including:

- Tubing
- Quick-connect fittings
- Data communication system
- Control components
- Master On/Off toggle
- System accessories

DELIVERY SYSTEM COMMON FEATURES CONTENTS

- **Product Overview, page 154**
- **Flow Diagrams, page 177**
- **Service/Usage Information, page 178**
- **Adjustments/Maintenance, page 172**
- **Illustrated Parts Breakdown, page 179**

PRODUCT OVERVIEW (ALL DELIVERY)

A-dec Tubing

A-dec products use four sizes of tubing: 1/8" OD, 1/4" OD, 3’8" OD and 5/16" OD. A-dec 500 products use the 5/16” OD for all high flow air and water applications. Figure 10 lists functions, descriptions and part numbers. Identify tubing functions by reading the tubing color and tracer markings.

Starting with A-dec 500, products use silicone handpiece tubing. The silicone handpiece tubing uses a European color code for air (blue) and water (green) that differs from the current U.S. standard.

Table 9 Silicone Handpiece Tubing Cross Reference Table

Color	Function
Clear	Drive air
Red	Exhaust
Blue	Air coolant
Green	Water coolant

Antimicrobial AlphaSan Tubing

In 2005 A-dec began blending a new type of tubing called antimicrobial AlphaSan for use in our products.

Identify antimicrobial AlphaSan tubing by the tracer on the tubing - *“Antimicrobial AlphaSan®.”* Antimicrobial AlphaSan tubing is used for water lines in A-dec delivery units.

Figure 86 Antimicrobial AlphaSan Tubing Tracer

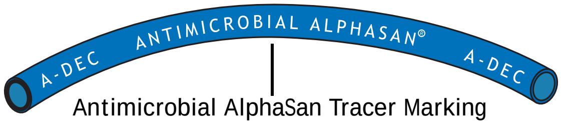
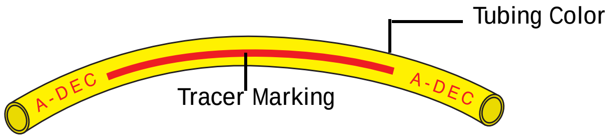
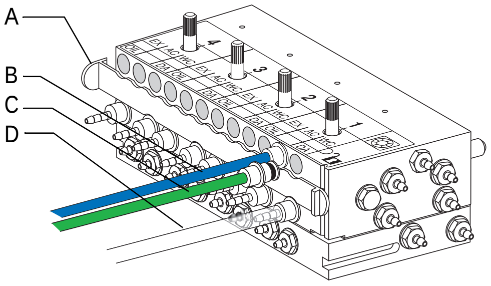


Figure 87 Tracer component



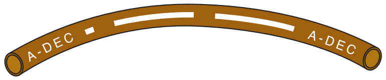
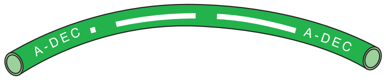
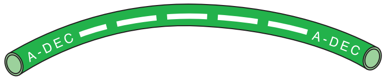
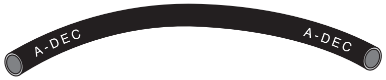
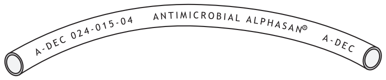
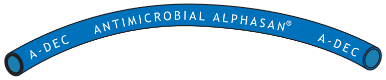
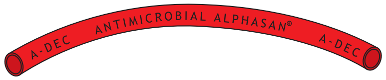
NOTE Tubing with the antimicrobial AlphaSan® stamp contains antimicrobial properties. Not all tubing used in A-dec products is antimicrobial AlphaSan tubing.

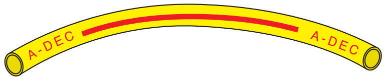
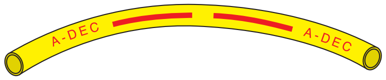
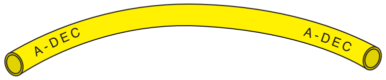
Figure 88 Handpiece Tubing Connections

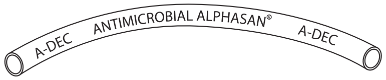
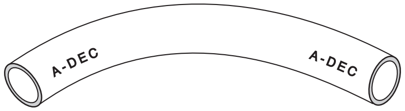
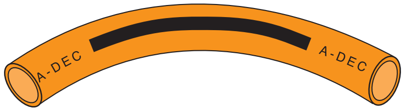
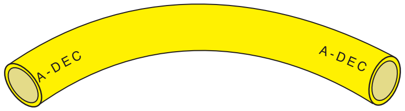
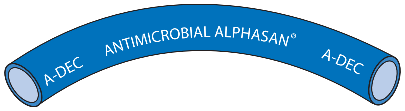


(A) Barb Retainer; (B) Air Coolant Tubing; (C) Water Coolant Tubing; (D) Drive Air Tubing

Table 10 A-dec Tubing Identification

Tubing Function	Description	Tubing Color/Tracer	Part Number
Chip blower/accessory button	Chip blower air - 1/8" OD, brown/ white long dash		036.014.02
Air coolant signal	Air coolant signal air from foot control; signal air for cuspidor cup fill and vacuum actuator - 1/8" OD, green/white long dash		036.006.03
Water coolant signal	Water coolant signal air from foot control; signal air for cuspidor bowl rinse - 1/8" OD, green/white short dash		036.018.03
Unregulated air	Unregulated air to flexarm brake - 1/8” OD, black		036.020.03
Water coolant signal air	Signal air (clear) from foot control valve to wet/dry toggle - 1/8" OD, clear	 A-DEC 024-015-04 ANTIMICROBIAL ALPHASAN® A-DEC	024.015.04
Water supply, cold water (regulated)	Oral cavity water - 1/8" OD, blue	 A-DEC ANTIMICROBIAL ALPHASAN® A-DEC	036.004.03
Oral cavity water	Syringe water, with/without water heater - 1/8" OD, red	 A-DEC ANTIMICROBIAL ALPHASAN® A-DEC	036.005.03

Tubing Function	Description	Tubing Color/Tracer	Part Number
Unregulated air, master air	Continuous, filtered, unregulated air - 1/8" OD from the air filter regulator to the master On/Off toggle, yellow/red stripe		036.013.03
Pilot air	Filtered unregulated air controlled by master On/Off toggle - 1/8" OD, yellow/red dash		036.009.04
Regulated air	Continuous, filtered, regulated air - 1/8" OD, yellow		036.003.03

Tubing Function	Description	Tubing Color/Tracer	Part Number
Miscellaneous	Miscellaneous line for use with A-dec authorized accessories - 1/8" OD, white	 A-DEC ANTIMICROBIAL ALPHASAN® A-DEC	036.019.03
Hydraulic fluid	Low pressure hydraulic system supply for chair - 3/8" OD, clear		036.035.00
Drive air	Drive air from foot control to delivery system - 5/16" OD, orange		036.0115.01
Regulated air	Supplies regulated air to the flush toggle and syringe - 5/16" OD, yellow		036.114.01
Water supply	Water bottle and city water - 5/16" OD, blue	 A-DEC ANTIMICROBIAL ALPHASAN® A-DEC	036.116.01

Quick Connect Fittings

A-dec 500 products use quick-connect fittings for some tubing connections. These fittings provide fast, secure, push-on installation of tubing. These quick-connects also make removal of tubing during servicing easy.

Connect Tubing

To connect tubing using the quick-connects:

1. Cut the tubing square, to ensure a secure connection.
2. Push the tubing into the connector until it can go no further.
3. Pull gently on the tubing to verify grip action.

Disconnect Tubing

1. Depressurize the unit.
2. Push and hold the release ring on the fitting connector.
3. Remove the tubing from the connector.

Figure 89 **Make a Square Cut**

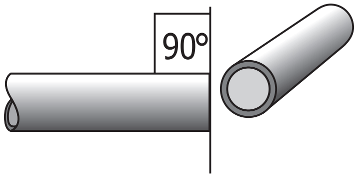


Figure 90 **Push Tubing Into the Fitting**

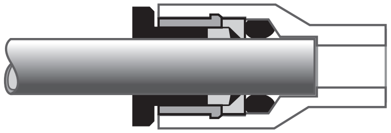
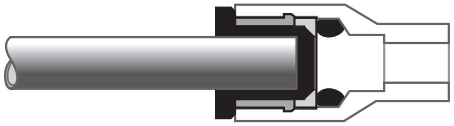


Figure 91 **Remove Tubing From the Fitting Connector**



Data Communication System

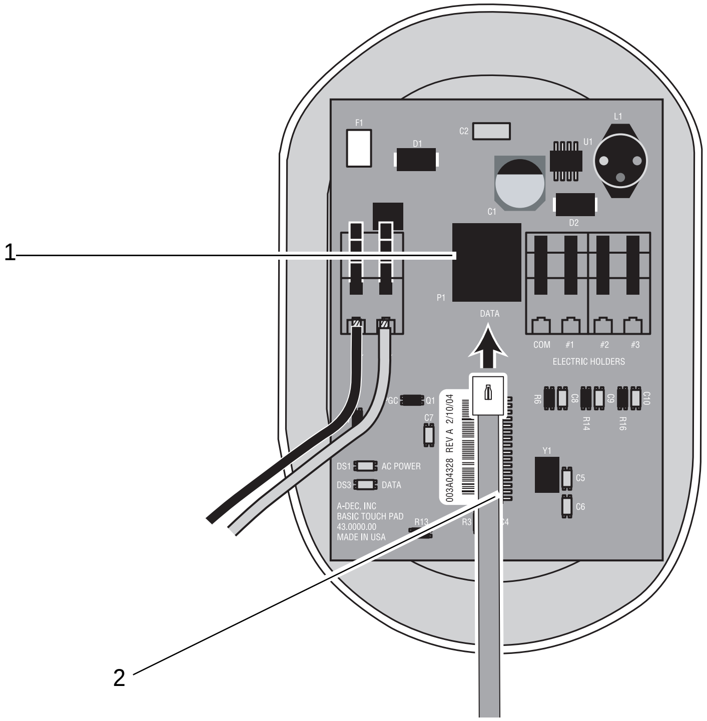
Data Communication System Features

A-dec 500 equipment uses an electronic communication tool, the Data Communication System (DCS). The DCS allows each module to communicate with the other modules and automatically detects when modules are added. For example, when connecting a cuspidor to the system, the DCS automatically recognizes the cuspidor module without any programming or setting changes.

You can plug any module into the data line connector on the circuit board. The circuit board recognizes which module has been plugged in and allows operation of that module to begin. Should a module malfunction or fail to work, the DCS maintains service to the rest of the modules. Other modules continue to function in spite of the one that has failed.

Item	Description
1	Data line connectors
2	DCS lines

Figure 92 DCS Line and Connector


1
F1
C2
D1
L1
U1
C1
D2
P1
DATA
COM
#1
#2
#3
ELECTRIC HOLDERS
PGC
Q1
C7
003A04328 REV A 2/10/04
R6
C8
C9
C10
R14
R16
Y1
C5
C6
DS1
AC POWER
DS3
DATA
A-DEC, INC
BASIC TOUCH PAD
43.0000.00
MADE IN USA
R13
R3
C4
2

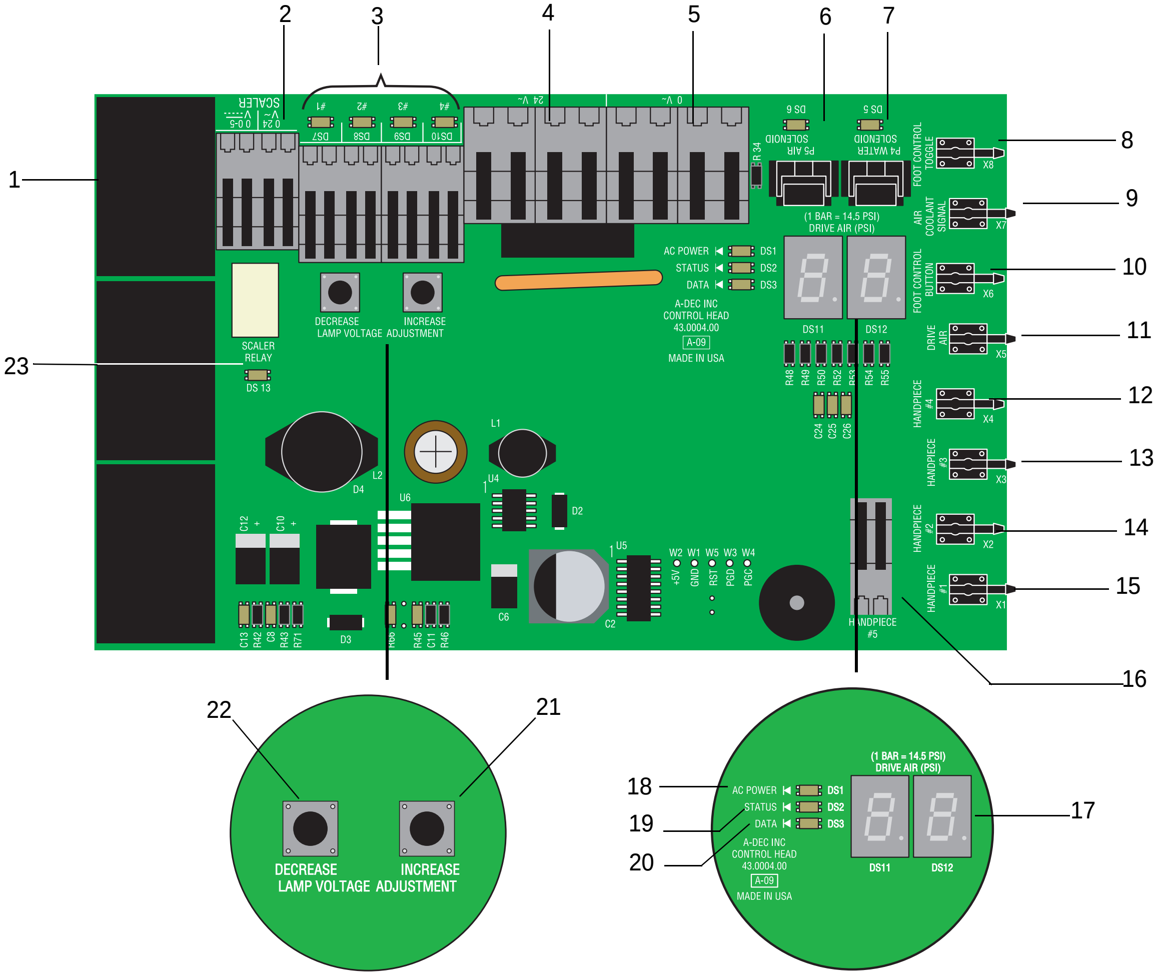
Circuit Board Components

Part No: 90.1076.00

The delivery system circuit board has a wide range of functionality with a built-in intraoral light source, drive air pressure digital readout, and status LEDs. Transducers translate air signals to electronic signals, communicating with the touchpad and other components when a handpiece is ready for use.

Item	Description
1	P1, P2, P3 - Data line ports (DCS)
2	J6 - Scaler power terminal strip
3	J4, J5 - Intraoral light source strip and LEDs DS7, DS8, DS9, DS10
4	J2 - 24 VAC terminal strip
5	J2 - Ø VAC terminal strip
6	DS6 - Air coolant solenoid LED and connector
7	DS5 - Water coolant solenoid LED and connector
8	X8 - Water coolant signal transducer (foot control toggle)
9	X7 - Air coolant signal transducer
10	X6 - Accessory button (foot control) signal transducer
11	X5 - Drive air signal transducer
12	X4 - Handpiece 4, holdback transducer
13	X3 - Handpiece 3, holdback transducer
14	X2 - Handpiece 2, holdback transducer
15	X1 - Handpiece 1, holdback transducer
16	J3 - Handpiece 5, terminal strip
17	DS11, DS12 - Drive air LED display
18	DS1 - AC Power LED
19	DS2 - Status LED
20	DS3 - Data LED
21	S2 - Increase intraoral light source voltage adjustment
22	S1 - Decrease intraoral light source voltage adjustment
23	DS13 - Scaler relay LED

Figure 93 **Components of the Delivery System Circuit Board**

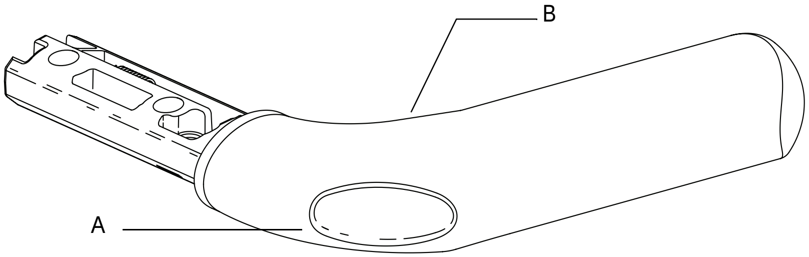

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
SCALER
0 24 V~
0-5 V
#1
#2
#3
#4
DS7
DS8
DS9
DS10
24 V~
0 V~
DS 6
DS 5
P5 AIR SOLENOID
P4 WATER SOLENOID
R 34
(1 BAR = 14.5 PSI)
DRIVE AIR (PSI)
FOOT CONTROL TOGGLE
X8
AIR COOLANT SIGNAL
X7
FOOT CONTROL BUTTON
X6
DRIVE AIR
X5
HANDPIECE #4
X4
HANDPIECE #3
X3
HANDPIECE #2
X2
HANDPIECE #1
X1
HANDPIECE #5
AC POWER
STATUS
DATA
DS1
DS2
DS3
A-DEC INC
CONTROL HEAD
43.0004.00
A-09
MADE IN USA
DS11
DS12
R48
R49
R50
R52
R53
R54
R55
C24
C25
C26
SCALER RELAY
DS 13
DECREASE
INCREASE
LAMP VOLTAGE ADJUSTMENT
L1
L2
D4
U6
U4
D2
U5
W2
W1
W5
W3
W4
+5V
GND
RST
PGD
PGC
C12
C10
C6
C2
D3
C13
R42
C8
R43
R71
R66
R45
C11
R46

Brake Handle

Part No: 77.0104.01

The brake handle activates a replaceable microvalve, releasing pressure on the brake inside the flexarm.

Figure 94 Brake Handle Components



(A) Brake Button; (B) Brake Handle

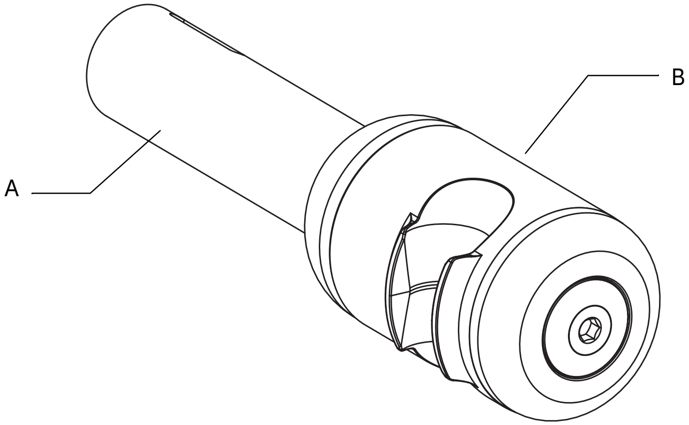
Accessory Holder

Part No: 99.0681.00 Standard
Part No: 99.0684.00 Auto-electric

The accessory holder is either an active or non-active position on the delivery system. It can be mounted on either side of the delivery system, opposite the touchpad.

Auto-electric holders have a power source at the terminal for handpiece position 5 on the delivery system circuit board.

Figure 95 Accessory Holder Components



(A) Hub; (B) Syringe/Saliva Ejector Holder Assembly

Master On/Off Toggle

Part No: 33.0048.05 (541 and 545)
Part No: 33.0153.00 (532/533/542)

The master On/Off toggle is located on the worksurface support of the 541 delivery system and on the side of the 532, 533 and 542 delivery systems. The toggle operates with unregulated air and supplies air to the control block for holdback air. When the master toggle is off, the delivery system does not have power.

Item	Description
1	Master On/Off toggle

Figure 96 **Master On/Off Toggle — 541**

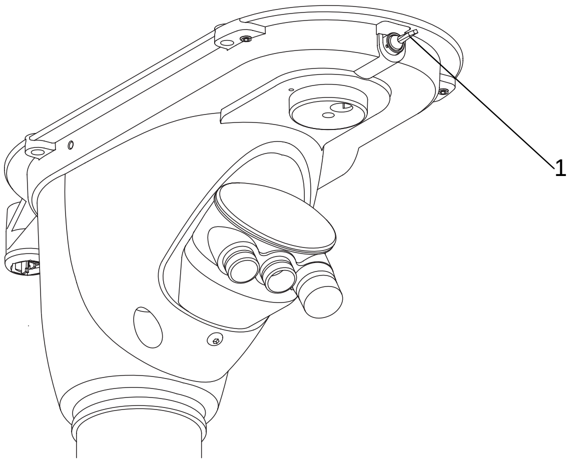
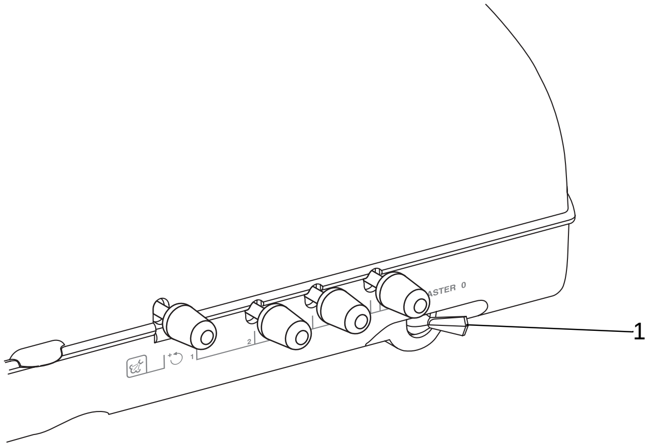


Figure 97 **Master On/Off Toggle — 532/533/542**



Flush Toggle

Part No: P/N 33.0168.00

The flush toggle is located on side of the 541 12 O'clock duo delivery system and on the back of the 532, 533 and 542 delivery systems. The flush toggle uses holdback air to operate the handpiece flush function. When the momentary valve is on, the holdback air is exhausted and air signal is sent toward the water cartridge.

- If the handpiece is in the holder (holdback active), the flush is not activated.
- If the handpiece is out of the holder (holdback exhausted), the flush operates.

Item	Description
1	Handpiece flush toggle

Figure 98 **Flush Toggle — 541**

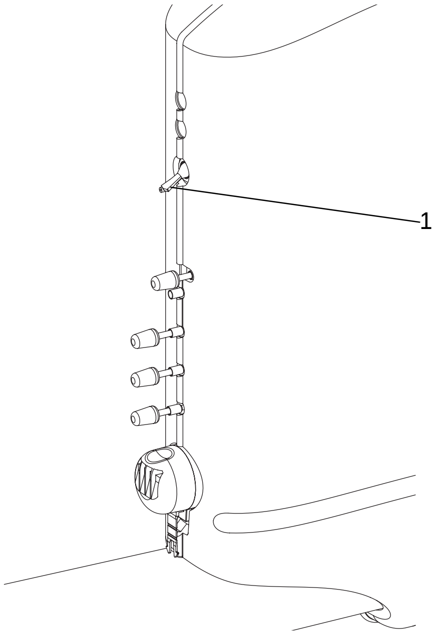
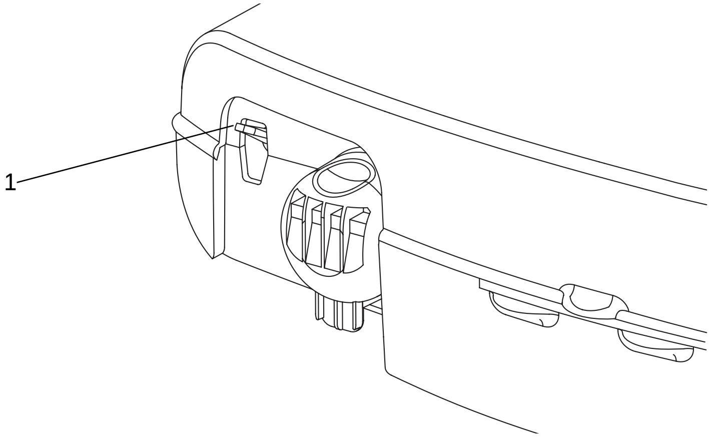


Figure 99 **Flush Toggle — 532/533/542**

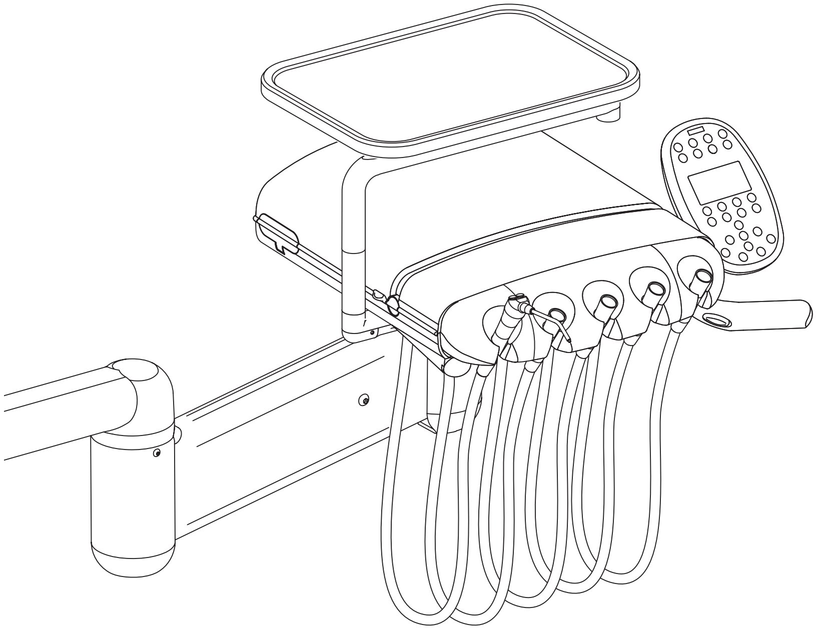


Traditional Tray Holder

Part No: 77.0294.00/77.0295.00

The traditional tray holder can be mounted on the left or right side below the delivery system.

Figure 100 **Traditional Tray Holder Components**



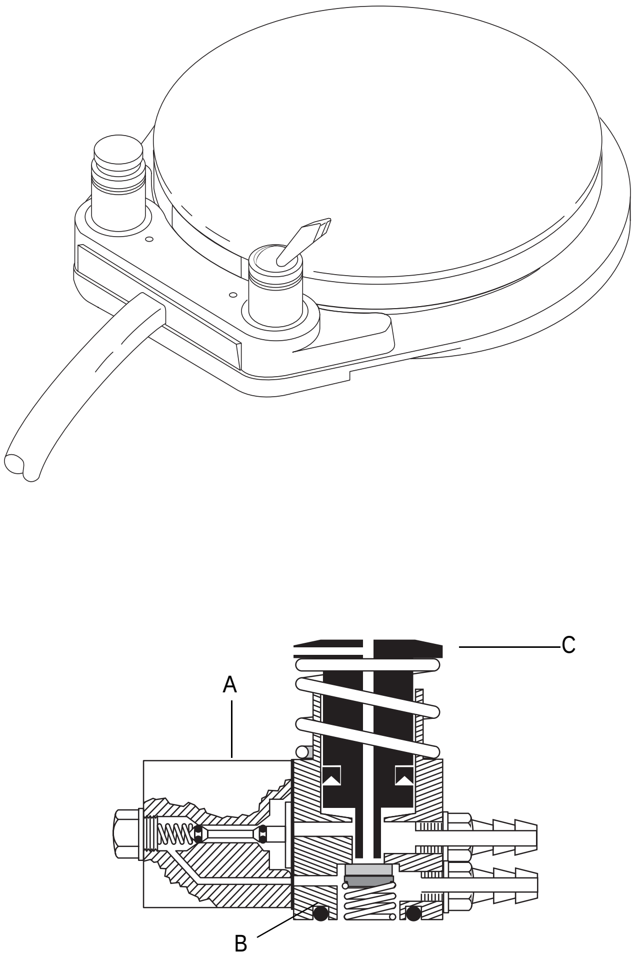
Foot Control

Part No: 38.1805.01 (541/545)
38.1805.00 (532/533/542)

The A-dec 500 foot control is a foot-operated regulator. Handpieces are operated by applying pressure on the foot control. As pressure is applied to the foot control, the black piston exhaust vent seals against the poppet, then pushes the poppet away from the inlet seat. When the poppet is unseated, regulated air flows through the valve and out to the delivery system as drive air.

Regulated air is also sent through the relay block and to the delivery system as air coolant signal. When pressure is released from the foot control, the poppet reseals the inlet and pressure is exhausted from the outlet side of the valve and up through the piston.

Figure 101 A-dec Foot Control



(A) Signal Relay Valve; (B) Diaphragm; (C) Piston

Self-Contained Water Bottle

Part No: 14.0468.00

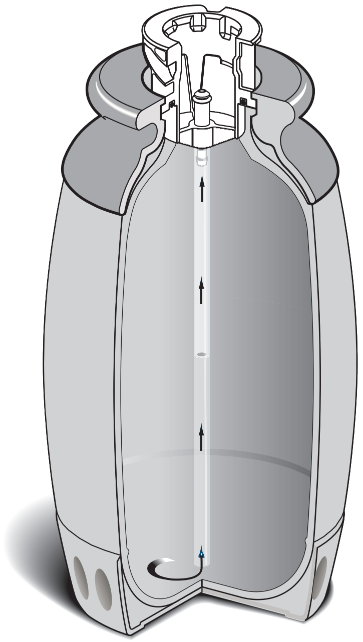
The A-dec self-contained water system is a closed system, which isolates treatment water from the municipal water supply. The A-dec 500 water bottle is designed to prevent cross-contamination during refilling. The pickup tube is located inside the bottle assembly and is not exposed to outside contaminates. Air pressure forces water from the water bottle into the pick-up tube. Water is distributed to the delivery system, syringe, handpieces and assistant's syringe.

WARNING Use only A-dec water bottles. Do not use other brands, or damaged bottles. They can pose a serious safety hazard if broken while pressurized. The A-dec plastic water bottles cannot withstand heat sterilization. Attempting to do so damages the bottle and the sterilizer.

CAUTION Use caution when using the self-contained water system with any dental units equipped with components that might fail when the water supply is interrupted. Some types of scalers and water heaters are examples of components that can be permanently damaged if operated without a continuous water source.

A-dec does not recommend using saline solutions, mouth rinses, or any chemical solutions, not specified by A-dec, in the A-dec self-contained water system. These may damage the water system components and cause the failure of the dental unit.

Figure 102 **Self-Contained Water Bottle**

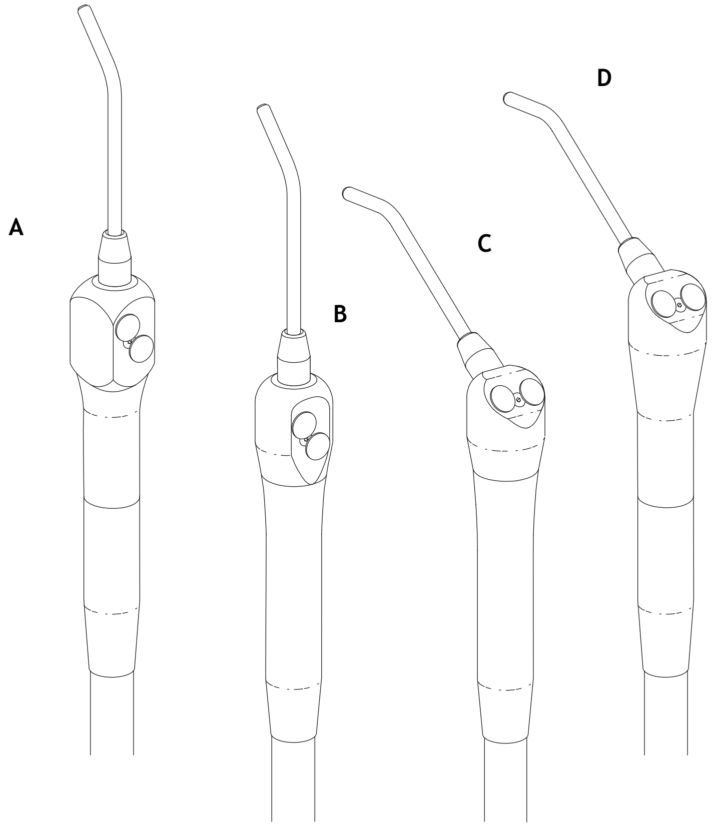


Standard Syringe

Continental and Traditional autoclavable syringes have serviceable air and water button valves. The tip retaining nuts have replaceable O-rings. See "Warm Water Syringe" on page 169 for illustrated parts breakdown for the warm water syringes. See the *Illustrated Parts Breakdown*, P/N 85.0851.00 for other Continental and Traditional syringe parts.

WARNING Turn off and bleed the system of air and water before servicing the syringe. The use of disposable syringe tips in A-dec syringe tip nuts is not recommended.

Figure 103 Autoclavable Syringes



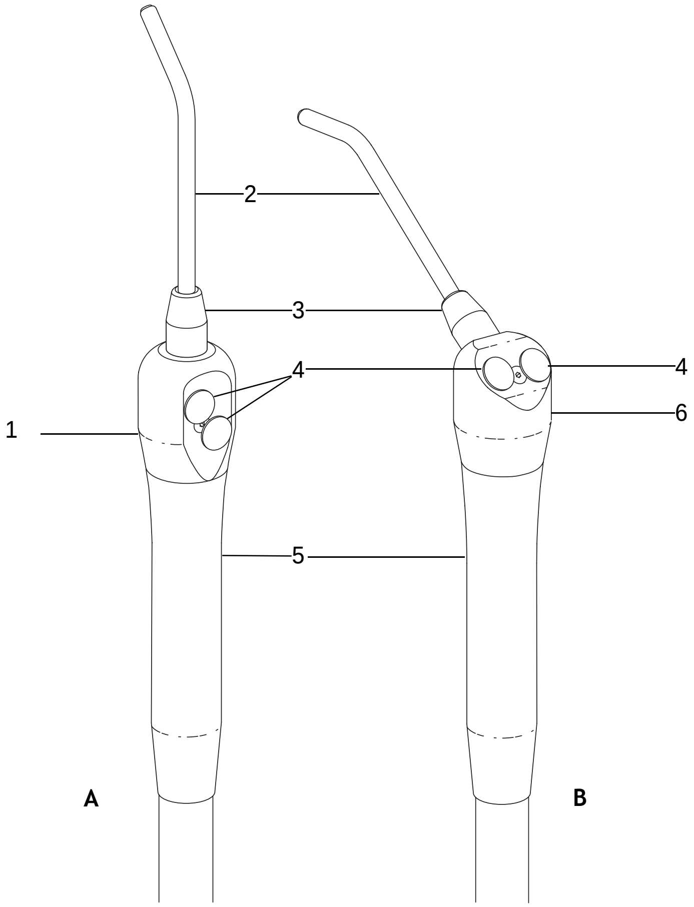
(A) Continental Syringe; (B) Continental Warm Water Syringe; (C) Traditional Warm Water Syringe; (D) Traditional Syringe

Warm Water Syringe

The Continental and Traditional warm water syringe share many of the same components. The syringe head is the only component specific to each model of syringe.

Item	Description
1	Continental syringe head
2	Syringe tip
3	Syringe nut, smooth
4	Button valve
5	Syringe handle
6	Traditional syringe head

Figure 104 Warm Water Syringe



(A) Continental Warm Water Syringe; (B) Traditional Warm Water Syringe

Syringe Temperature Selection Input

The warm water syringe temperature selection input allows the technician to select the estimated patient cheek temperature between a minimum temperature of 82.4ºF (28ºC) and a maximum temperature of 100.4ºF (38ºC).

Warm Water Syringe Specifications

There are five positions ranging from minimum to maximum for temperature variations. These temperatures are shown in the table (see Table 11).

Table 11 Warm Water Syringe Temperature Selections

Jumper Selection	Estimated Temperature at Patient's Cheek
5 (maximum)	100.4ºF (38ºC)
4	96.8ºF (36ºC)
3	93.2ºF (34ºC)
2	89ºF (32ºC)
1 (minimum)	86.0ºF (30ºC)
No jumper	82.4ºF (28ºC)

NOTE If two jumpers are installed, the micro controller averages the two selections together. If three or more are installed, only the lowest two jumpers are recognized.

Figure 105 Warm Water Syringe Circuit Board

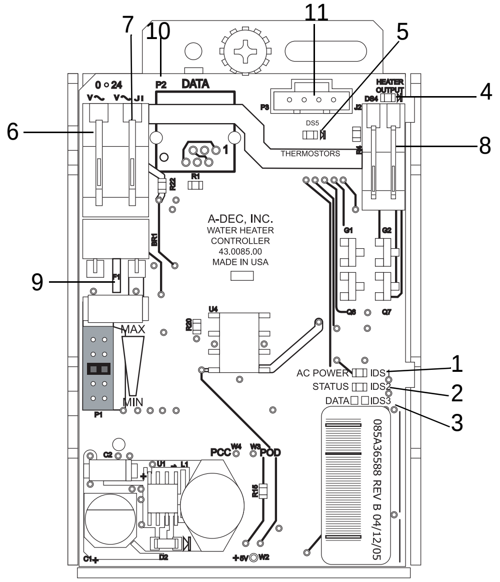

7
10
11
5
4
8
6
9
1
2
3
0 ○ 24
V~ V~ J1
P2
DATA
P3
J2
HEATER OUTPUT
DS4
DS5
THERMOSTORS
R4
R1
R22
BR1
F1
A-DEC, INC.
WATER HEATER
CONTROLLER
43.0085.00
MADE IN USA
G1
G2
Q6
Q7
U4
R20
MAX
MIN
P1
AC POWER
STATUS
DATA
IDS1
IDS2
IDS3
085A36588 REV B 04/12/05
PCC
W4
W3
POD
C2
U1
L1
R15
C1
D2
+5V
W2

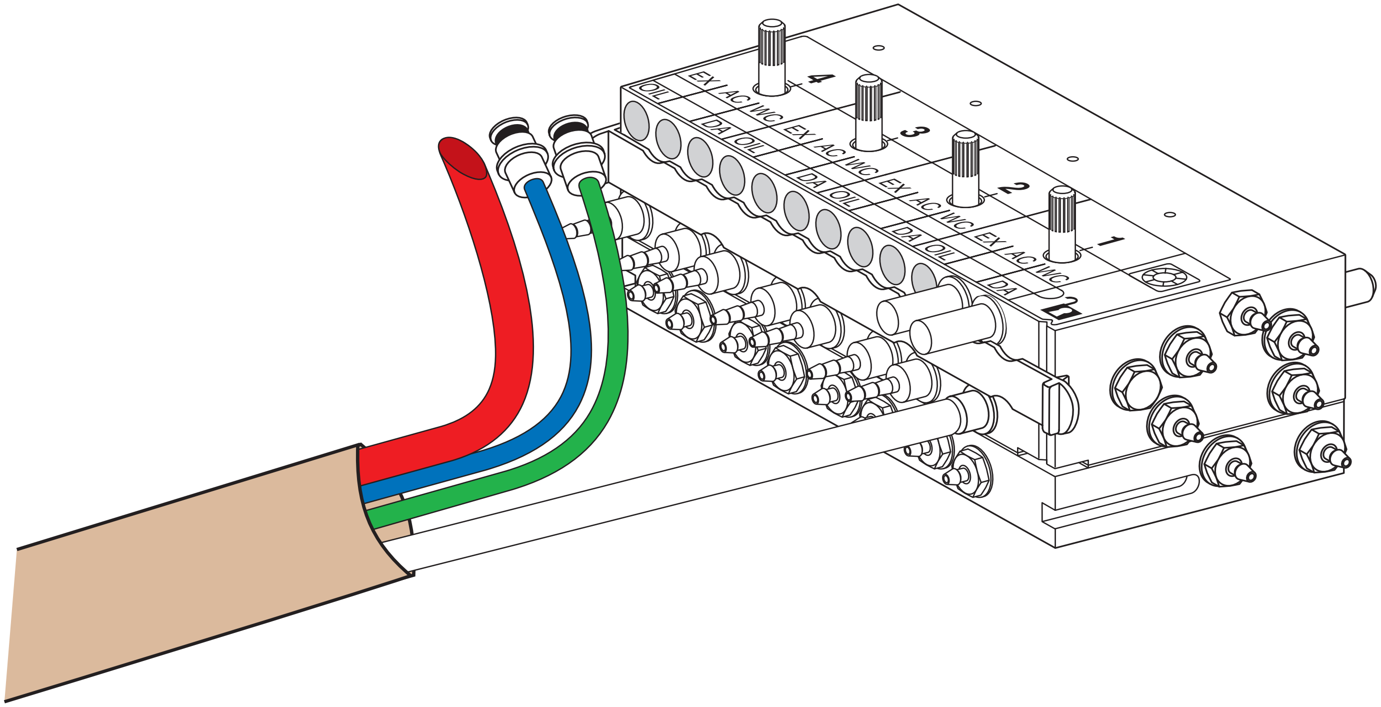
Table 12 Warm Water Syringe Circuit Board

Item	Description
1	DS1—AC power LED
2	DS2—Status LED
3	DS3—Data LED - NOT USED (reserved for future use)
4	DS4—Heater output LED
5	DS5—Thermistors (temperature sensors) LED
6	J1—0 VAC terminal strip
7	J1—24 VAC terminal strip
8	J2—Heater output terminal strip
9	P1—Temperature selection header
10	P2—Data line port (DCS) - NOT USED - (reserved for future use)
11	P3—Thermistors (temperature sensors) connector

Tooth Dryer

The A-dec warm air tooth dryer needs a dedicated four-hole handpiece tubing and a minimum of 60 psi compressed air to operate properly. The tooth dryer is only plumbed to the drive air on the control block. Remove the barb from the exhaust tubing (red) and cut the tubing at an angle to reduce noise. Anchor, but do not pinch, the exhaust tubing to the structural platform using a cable tie. There are no moving parts in the tooth dryer, only cleaning is needed.

Figure 106 **Connecting the Tooth Dryer to the Control Block Drive Air**



ADJUSTMENTS (COMMON FEATURES)

Control Block

Part No: 38.1776.00

All A-dec 500 delivery systems use the same control block assembly for adjusting handpiece air and water coolant flow. The adjustment controls for air and water coolant are located on the side of the delivery system.

Figure 107 **Control Block — 541**

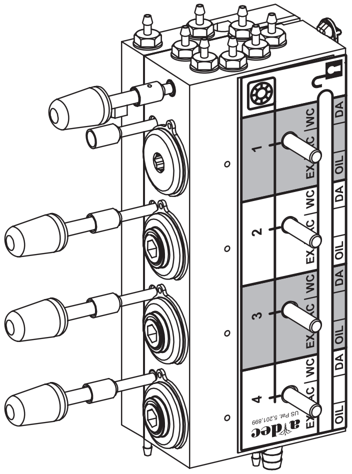
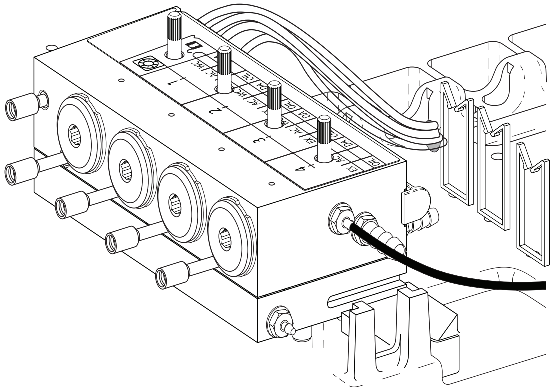


Figure 108 **Control Block — 532/533/542**



Air Coolant

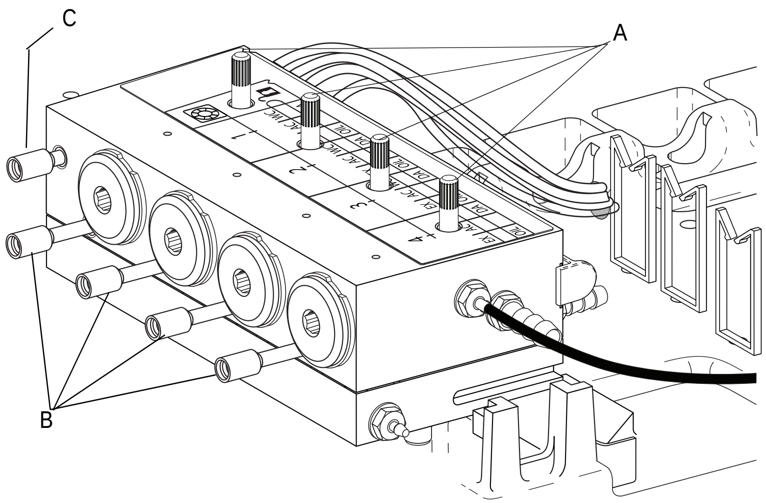
Adjusting the air coolant for one handpiece sets it for all of the positions.

1. Flip the wet/dry toggle on the foot control to the ON position.
2. Install a bur into a handpiece and activate the position.
3. Fully depress the foot control.
4. Adjust the handpiece air coolant adjustment key to create a cooling mist at the bur.

Water Coolant

1. Flip the wet/dry toggle on the foot control to the ON position.
2. Install a bur into the handpiece and activate the position.
3. Fully depress the foot control.
4. Turn the water coolant adjustment key to adjust the flow to fit the operator's needs.
5. Repeat steps two through four for each wet handpiece.

Figure 109 Location of the Air and Water Coolant Adjustments



(A) Drive Air Adjustment Stem; (B) Water Coolant Adjustment Stem; (C) Air Coolant Adjustment Stem

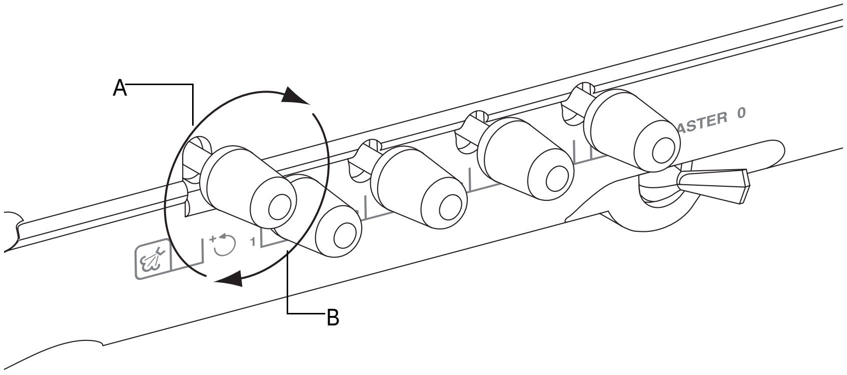
Drive Air

1. Use a handpiece pressure gauge to adjust the drive air for each handpiece tubing.
2. Install a bur into the handpiece and activate the position.
3. Fully depress the foot control.
4. Adjust the drive air flow (controls are on the top of the control block.

Air turbine handpieces should be set to 40 psi. EA-50LT electric micromotors (controller) should be set to a minimum of 60 psi.

NOTE The digital gauge inside the delivery system reads drive air pressure only at the control block. For accurate handpiece pressure settings, use a pressure gauge at the end of the handpiece tubing.

Figure 110 **Adjusting Flow**



(A) Increase Flow; (B) Decrease Flow

Tray Holder

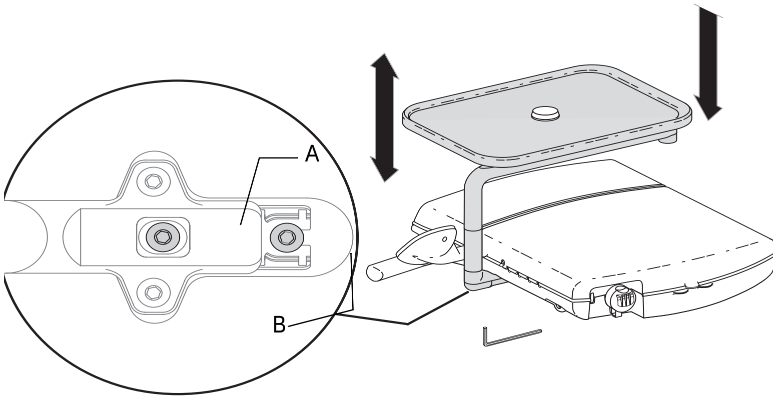
Adjust Tray Holder Tension

- To tighten the rotational tension of the tray holder, turn the hex bolt under the tray to the right.
- To loosen the rotational tension, turn it to the left.
- To adjust the rotational tension of the tray arm, tighten or loosen the hex bolt at the delivery system end of the arm.

Level Delivery System Tray

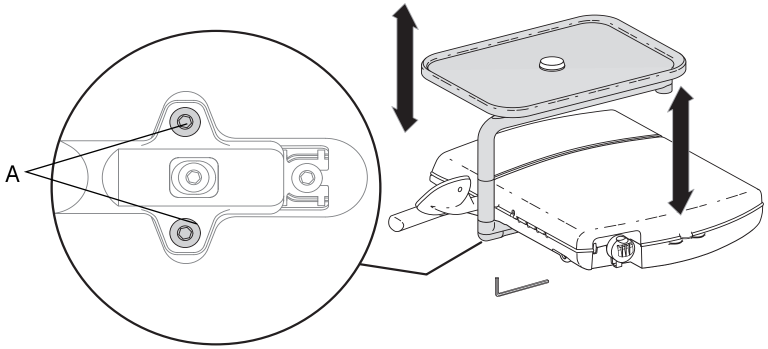
1. Use the adjustment screw to level side-to-side (see Figure 111).
2. Use the adjustment screws to level front-to-back (see Figure 112).

Figure 111 Side-To-Side Tray Level



(A) Leveling Screw; (B) Mounting Screw-DO NOT ADJUST

Figure 112 Front-To-Back Tray Level



(A) Leveling Screw

Intraoral Light Source Voltage

The intraoral light source voltage adjustment on the A-dec 500 doctor's delivery system is located on the delivery system circuit board. The voltage is preset to 3.2 volts at the lamp terminals when the lamp is on.

Figure 113 Intraoral Light Source Voltage

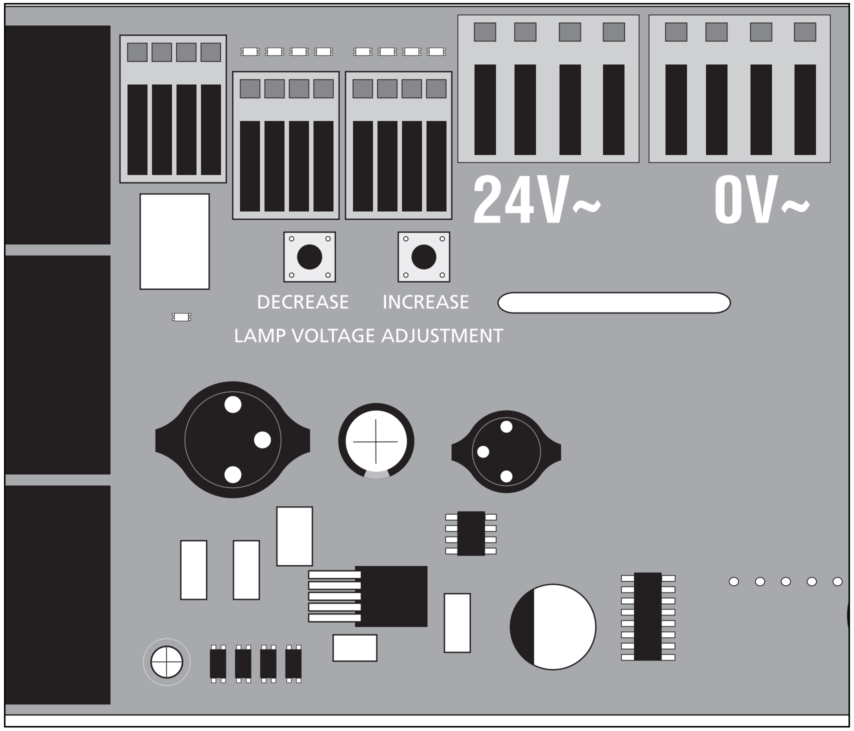
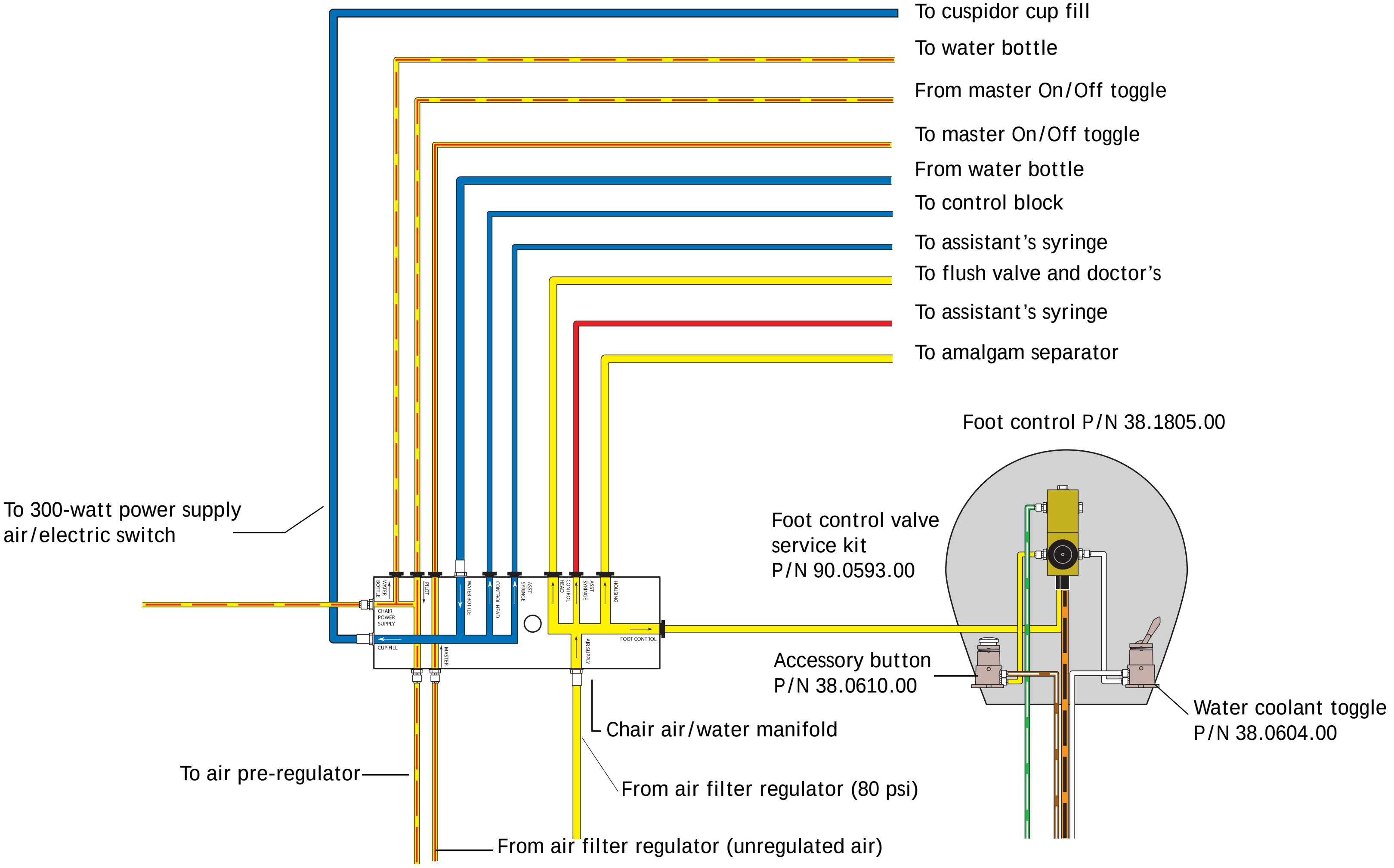


Table 13 Wire Length/Voltage

Length and Voltage Table		
Wire length in A-dec tubing		Voltage at terminal strip A-dec/W&H, Bien Air or other bulbs rated at 3.5V
(in)	(cm)	VDC +/- .02
48	122	3.51
54	137	3.54
60	152	3.56
66	168	3.59
72	183	3.62
78	198	3.65
84	213	3.67
90	229	3.69
96	244	3.71
102	259	3.74
108	274	3.76
114	290	3.79
120	305	3.82
126	320	3.85
132	335	3.57
138	351	3.90
144	366	3.93
150	381	3.96
156	396	3.99

FLOW DIAGRAMS

Foot Control


To cuspidor cup fill
To water bottle
From master On/Off toggle
To master On/Off toggle
From water bottle
To control block
To assistant's syringe
To flush valve and doctor's
To assistant's syringe
To amalgam separator
Foot control P/N 38.1805.00
To 300-watt power supply air/electric switch
Foot control valve service kit P/N 90.0593.00
WATER BOTTLE
PILOT
WATER BOTTLE
CONTROL HEAD
ASST SYRINGE
CONTROL HEAD
ASST SYRINGE
HOUSING
CHAIR POWER SUPPLY
CUP FILL
MASTER
AIR SUPPLY
FOOT CONTROL
Accessory button P/N 38.0610.00
Water coolant toggle P/N 38.0604.00
Chair air/water manifold
To air pre-regulator
From air filter regulator (80 psi)
From air filter regulator (unregulated air)

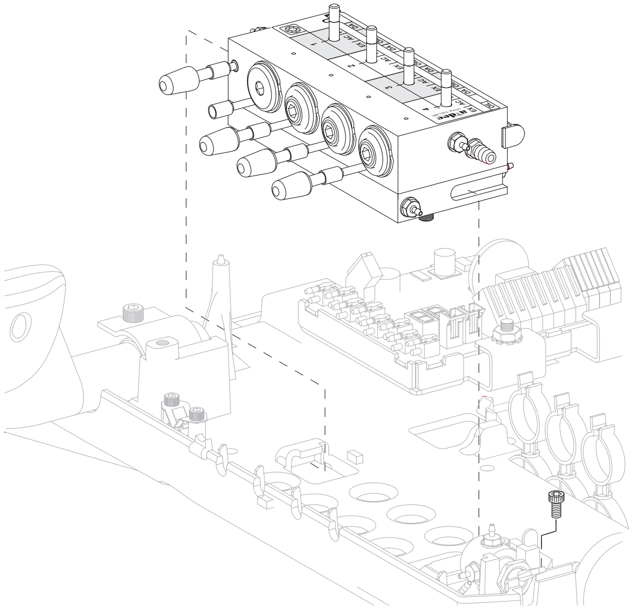
SERVICE/USAGE INFORMATION

Remove the Control Block

532/533/542 Delivery Systems

1. Loosen the hex screw holding the master on/off toggle mounting bracket to the delivery system platform.
2. Slide the bracket toward the back of the delivery system.
3. Lift the control block from the back, unhooking the front of the block.

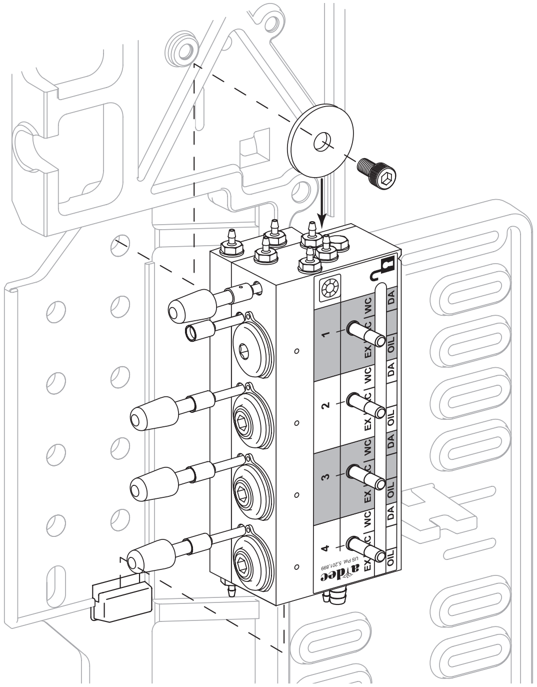
Figure 114 **Remove Control Block on 532/533/542 Delivery Systems**



541 Delivery System

1. Loosen and remove the hex screw and washer that secures the control block to the control center frame.
2. Slide the control block up so that the frame tab is no longer connected in the control block mounting slot.

Figure 115 **Remove Control Block on 541 Delivery System**



ILLUSTRATED PARTS BREAKDOWN (CROSS SYSTEM)

This section contains illustrated parts breakdowns for parts that are common to all A-dec 500 Delivery Systems (Model numbers 532, 533, 542, 541 and 545).

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

CROSS-SYSTEM IPB CONTENTS

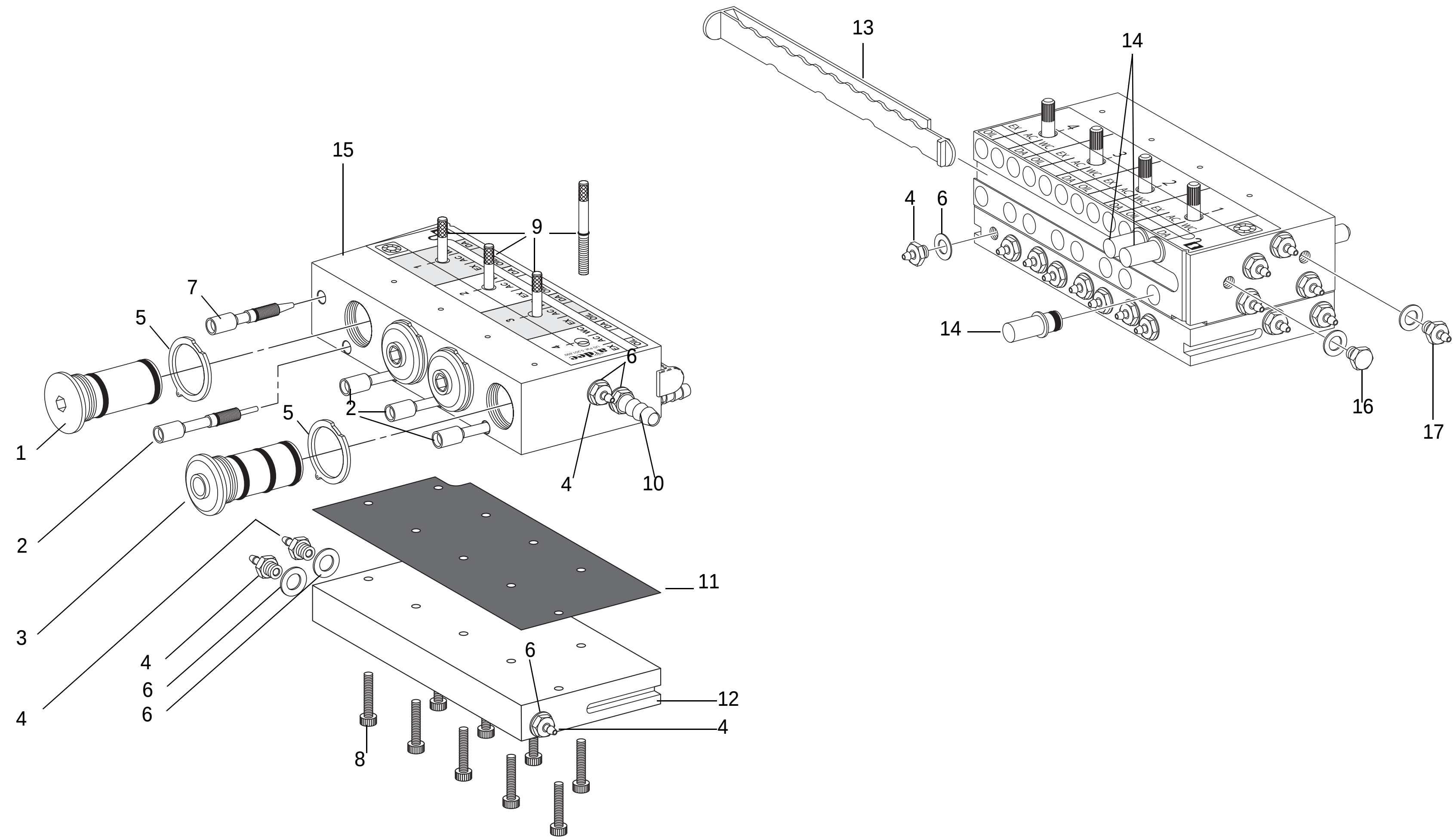
- Control Block Assembly, page 180
- Water Coolant Relay Assembly, page 182
- Dual Solenoid Manifold Assembly (Deluxe Touchpad Only), page 184
- Master On/Off Toggle, page 186
- Flush Toggle, page 188
- A-dec Foot Control, page 190
- Foot Control Accessory Button and Wet/Dry Toggle Valve, page 192
- Foot Control Signal Relay Main Body Valve, page 194
- Oil Collector, page 196
- Brake Handle Assembly, page 198
- Traditional Tray Holder, page 200
- Holder (532,533 and 542), page 202
- Holder (541 and 545), page 206
- Self-Contained Water Bottle, page 208
- Self-Contained Water Bottle Housing (Cabinet-Mounted), page 210
- Self-Contained Water Bottle Housing (Chair-Mounted), page 212
- Traditional and Continental Syringes, page 214
- Warm Water Traditional and Continental Syringes, page 216
- Autoclavable HVE Standard and 11/15 mm, page 218
- Autoclavable HVE with Large Bore 15mm (541 and 545), page 219
- Autoclavable Saliva Ejector, page 220

Control Block Assembly

Part No: 38.1776.00)

Item	Part Number	Description
1	38.1783.00	Water cartridge assembly, dry
2	38.0516.00	Water flow adjustment stem with O-ring
3	38.1780.00	Water cartridge assembly
4	023.004.03	Barb, 1/8 x 10-32, package of 10
5	38.1779.01	Retaining ring, package of 5 (part of the water cartridge assemblies - item 1 and 3)
6	004.005.02	Washer, flat nylon, .187 ID, package of 10
7	38.0526.00	Air coolant stem with O-ring
8	001.240.00	Screw, socket head, 6-32 x 3/4, stainless steel
9	38.1785.01	Drive air stem with O-ring
10	023.805.01	Barb, 5/16 x 10-32, package of 10
11	38.1787.01	Control block diaphragm, package of 5
12	38.1778.00	Control block cap
13	38.1800.00	Barb retainer, control block
14	026.160.01	QD plug with O-ring, package of 5
15	38.1777.00	Control block
16	021.016.00	Plug, hex head, 10-32
17	023.811.00	Barb, .018 restrictor, 1/8 x 10-12

Figure 116 **Control Block Assembly**

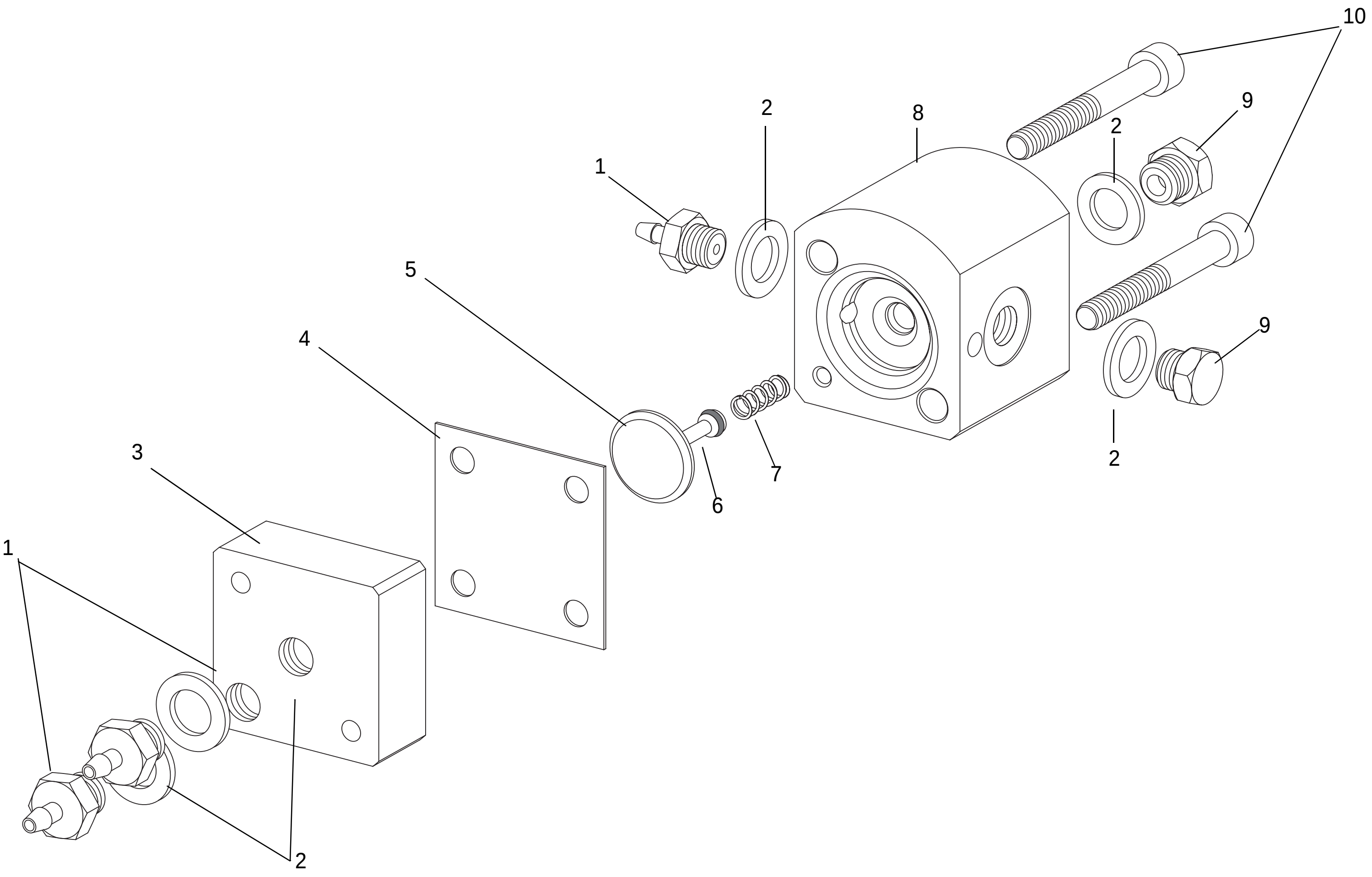

13
14
15
9
4
6
7
5
6
1
2
5
4
10
14
16
17
2
3
11
4
6
6
6
12
4
4
8

Water Coolant Relay Assembly

Part No: 38.1810.00

Item	Part Number	Description
1	023.004.03	Barb, 1/8 x 10-32, package of 10
2	004.005.02	Washer, flat nylatron, .187 ID, package of 10
3	38.1809.00†	Cap, relay — (replace with 38.1810.00)
4	38.0054.02	Diaphragm, 3/4 square, .013 thick, package of 10
5	22.0778.00	Stem, valve signal
6	30.0010.02	O-ring, package of 10
7	10.0440.00	Spring, compression, .093 OD x .250
8	38.0056.00	Body, valve, signal relay
9	021.016.04	Plug, hex head, 10-32, package of 10
10	002.102.00	Screw, socket head, 4-40 x 7/8

Figure 117 **Water Coolant Relay Assembly**

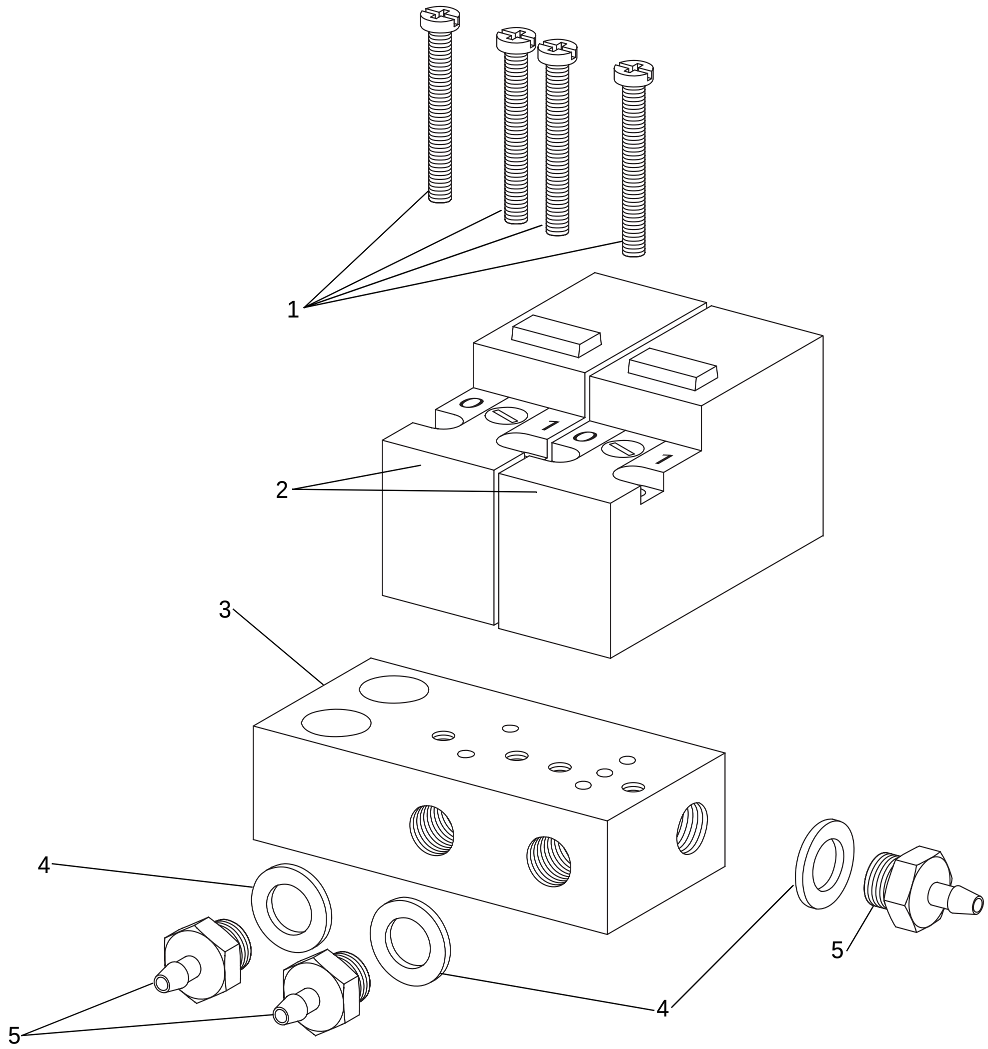

10
9
2
8
2
1
5
9
4
2
7
6
3
1
2

Dual Solenoid Manifold Assembly (Deluxe Touchpad Only)

Part No: 43.0057.00

Item	Part Number	Description
1		Screw, part of item 2
2	041.659.01	Valve assembly, solenoid, 5VDC
3	38.1789.00†	Manifold, solenoid, dual (replace with 43.0057.00)
4	004.005.02	Washer, flat, nylon, .187 ID, package of 10
5	023.004.03	Barb, 1/8 x 10-32, package of 10

Figure 118 **Dual Solenoid Manifold Assembly**

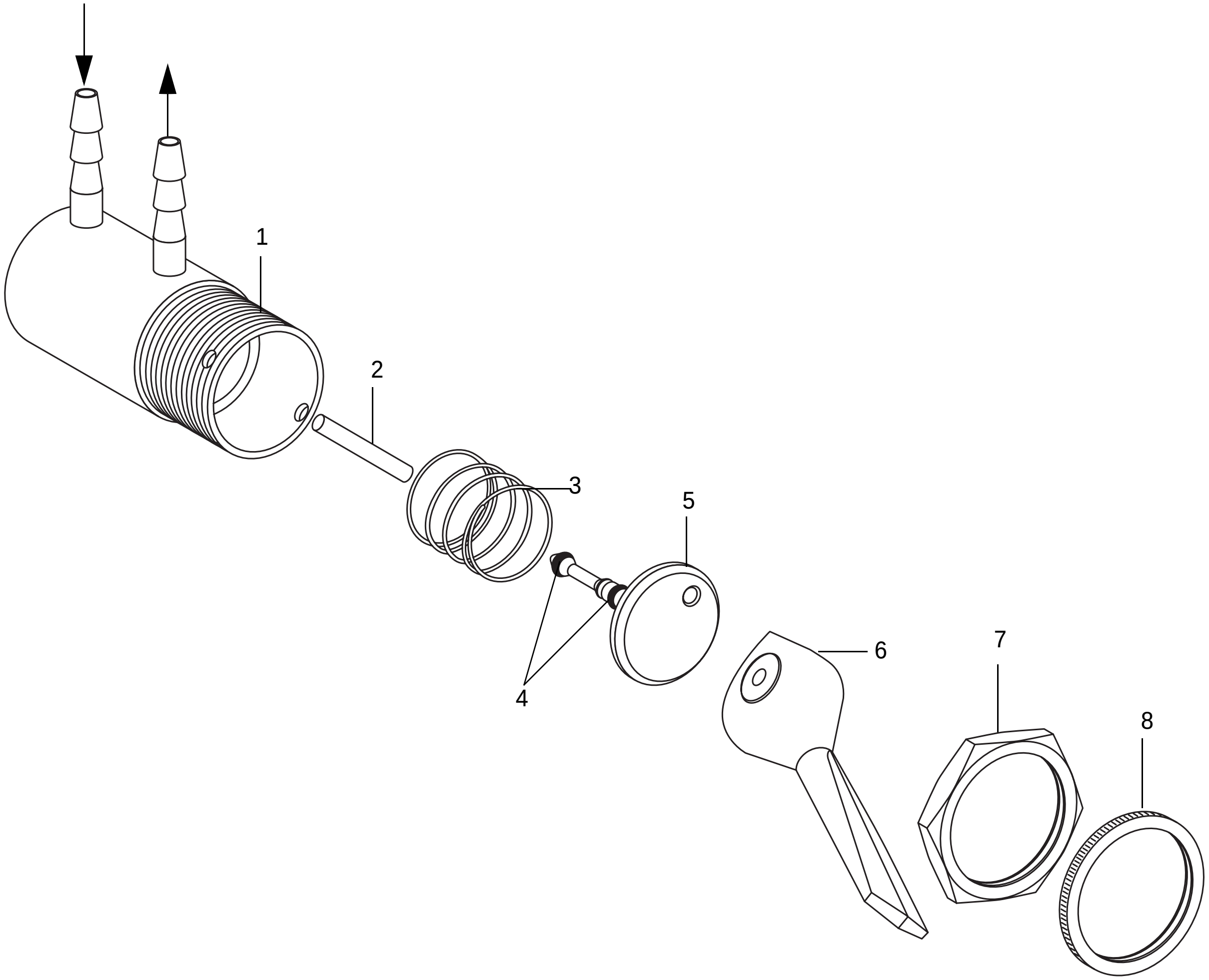


Master On/Off Toggle

Part No: 33.0048.05
Part No: 33.0153.00 (542)

Item	Part Number	Description
1	33.0050.00	Round toggle valve body
2	011.038.01	Straight pin, .062 diameter x .430, package of 5
3	22.0040.00	Compression spring, .300 OD x .40
4	030.001.02	O-ring, package of 10
5	29.0840.00	Valve stem with O-rings, 3-way
6	22.0462.02	Plastic toggle valve lever
7	006.009.00	Hex nut, 15/32-32" x 9/16 x 3/32"
8	006.069.00	Knurl nut, 15/32-32"

Figure 119 **Master On/Off Toggle**

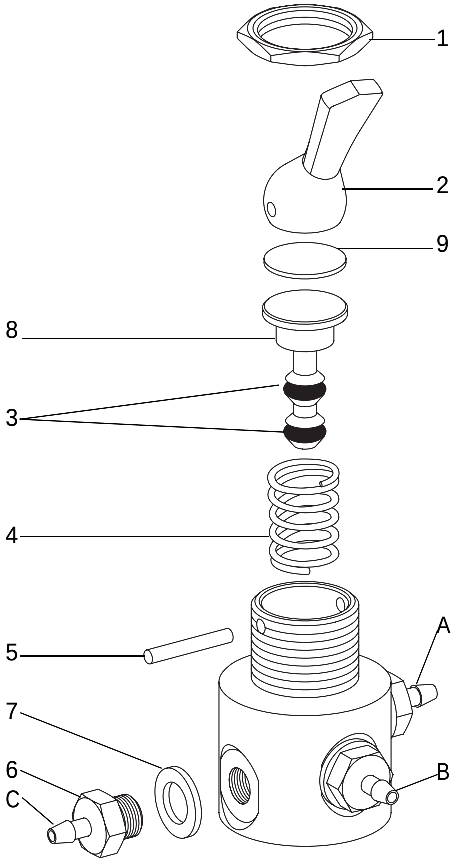


Flush Toggle

Part No: 33.0168.00

Item	Part Number	Description
1	006.009.00	Hex nut 15/32-32" X 9/16 X 3/32"
2	33.0036.02	Momentary toggle lever
3	030.003.02	O-ring, .056 ID x .060 W, package of 10
4	013.076.00	Spring, compression, .360 OD x .35 FL
5	011.038.01	Straight pin, .062 diameter x .430, package of 5
6	023.004.03	Barb, 1/8" x 10-32, package of 10
7	004.005.02	Washer, flat, nylon, .187 ID, package of 10
8	33.0170.00†	Stem, valve, 4 way
9	80.5025.00	Spacer, momentary toggle

Figure 120 **Flush Toggle**



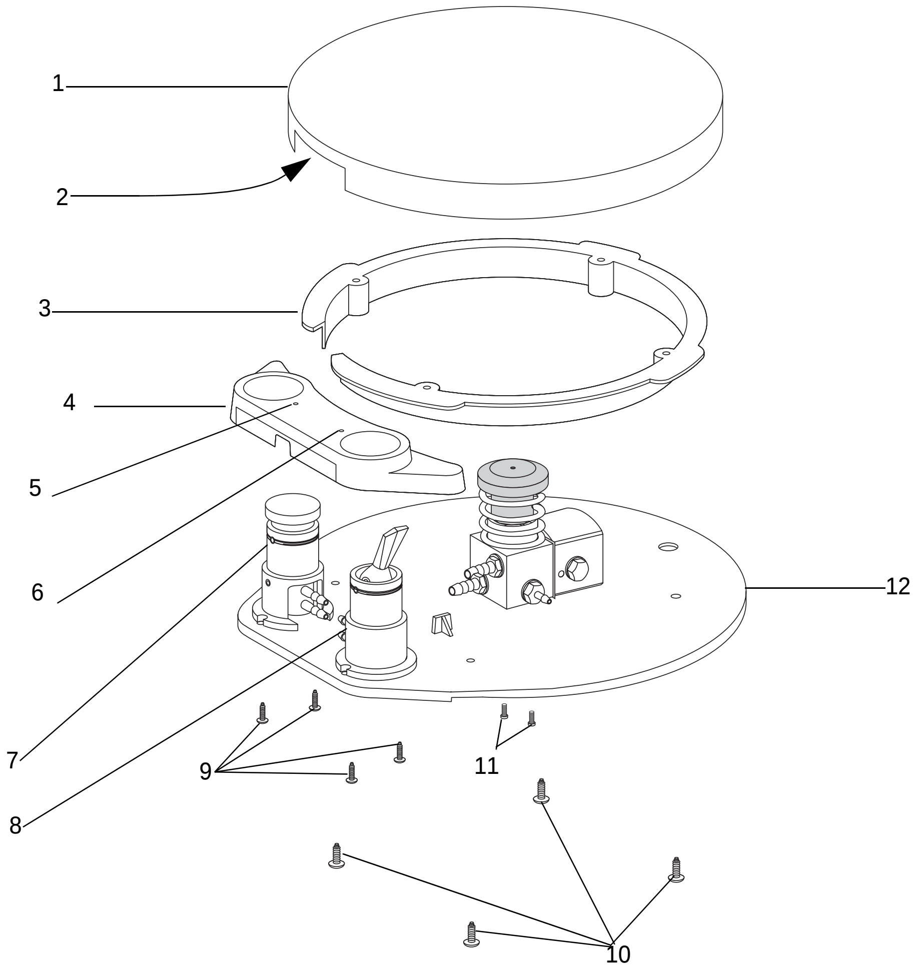
(A) Regulated Air to Control Block for Holdback; (B) Regulated Air; (C) To the Shuttle for Water Coolant Signal

A-dec Foot Control

Part No: 38.1805.01

Item	Part Number	Description
1	22.0110.00	Foot control cover, chrome (includes item 2)
2	38.0076.00	Foam liner, adhesive back
3	38.0237.00	Black retaining ring, 5" OD
4	38.1802.00	2-Hole housing access, 5/16"
5	40.0689.00	Yellow plastic indicator
6	40.0691.00	Blue plastic indicator
7	38.0612.00	Foot control accessory valve
8	38.0604.00	Wet/dry toggle valve
9	003.031.00	Phillips pan head screw, #4 x 1/2", zinc
10	003.022.00	Phillips pan head screw, #6 x 1/2", zinc
11	003.078.00	Screw, socket head, 4-40 1/4", zinc
12	38.0059.02	Base assembly, foot control

Figure 121 **A-dec Foot Control**

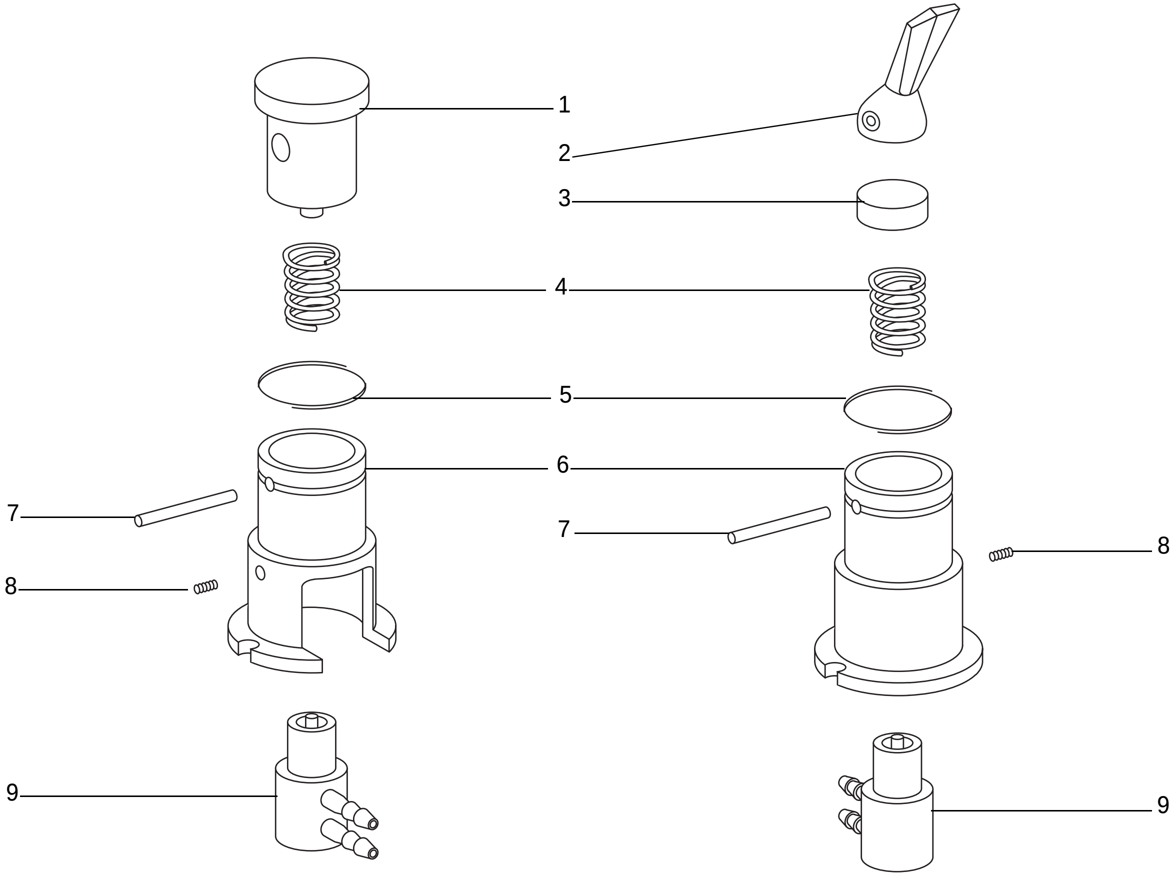

1
2
3
4
5
6
7
8
9
10
11
12

Foot Control Accessory Button and Wet/Dry Toggle Valve

Part No: 38.0612.00 and 38.0604.00

Item	Part Number	Description
1	38.0070.00	Actuator button
2	38.0075.03	Foot control toggle valve lever, with pin
3	38.0066.00	Cap spring, wet/dry valve assembly
4	22.0040.00	Spring, helical compression, .300 OD x .40
5	010.056.00	Retainer spring, .600 diameter
6	38.0072.03	Holder valve
7	011.016.00	Pin, dowel, .125 diameter x .625
8	007.002.00	Setscrew, socket cup point, 6-32 x 3/16
9	33.0138.00	3-way micro valve assembly

Figure 122 **Foot Control Accessory Button and Wet/Dry Toggle Valve**



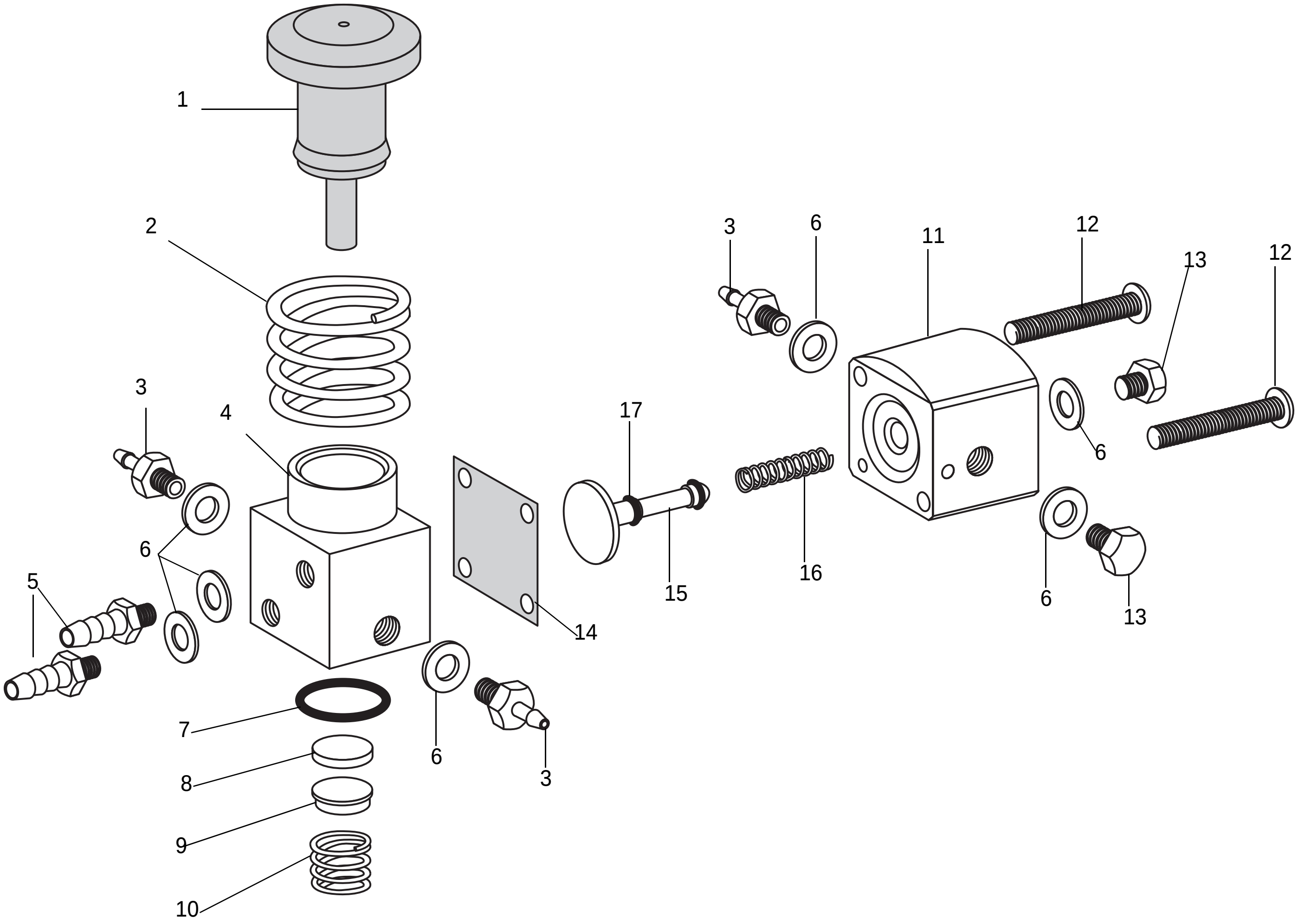
Foot Control Accessory Button
P/N 38.0612.00

Wet/Dry Toggle Valve
P/N 38.0604.00

Foot Control Signal Relay Main Body Valve

Item	Part Number	Description
1	38.0760.00	Piston, foot control III assembly
2	013.011.00	Spring, helical compression, .760 OD x .47 FL
3	023.004.03	Barb, 1/8 x 10-32, package of 10
4	38.0759.00	Body relay
5	023.805.01	Barb, 5/16 x 10-32, package of 10
6	004.005.02	Washer, flat, nylon, .187 ID, package of 10
7	030.012.02	O-ring, .364 ID x .070 wide, package of 10
8	22.0060.00	Poppet, plastic, foot control
9	22.0050.00	Cap spring, foot control
10	22.0580.00	Spring, compression, .312 OD x .25
11	38.0056.00	Signal relay body valve
12	002.102.00	Screw, socket head 4-40 x 7/8", Zinc
13	021.016.04	Hex plug, 10-32, package of 10
14	38.0054.02	Diaphragm, 3/4" square x .013 thick, package of 10
15	22.0778.00	Valve stem with O-rings
16	10.0440.00	Spring, compression, .312 OD x .25
17	030.001.02	O-ring, package of 10

Figure 123 **Foot Control Signal Relay Main Body Valve**

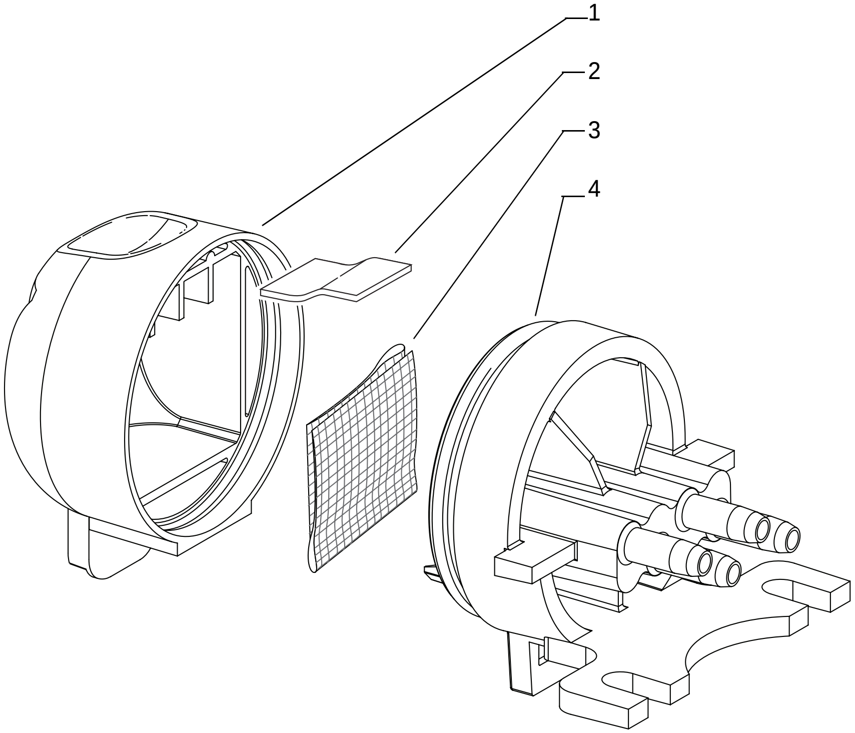

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

Oil Collector

Part No: 90.1110.00 Oil Collector Assembly)

Item	Part Number	Description
1	77.0336.00	Oil collector, top
2	77.0503.00	Muffler, foam (part of 90.1106.00 oil collector muffler kit)
3	026.143.00	Gauze, 2" x 2"
4	77.0337.00	Oil collector, bottom

Figure 124 **Oil Collector**

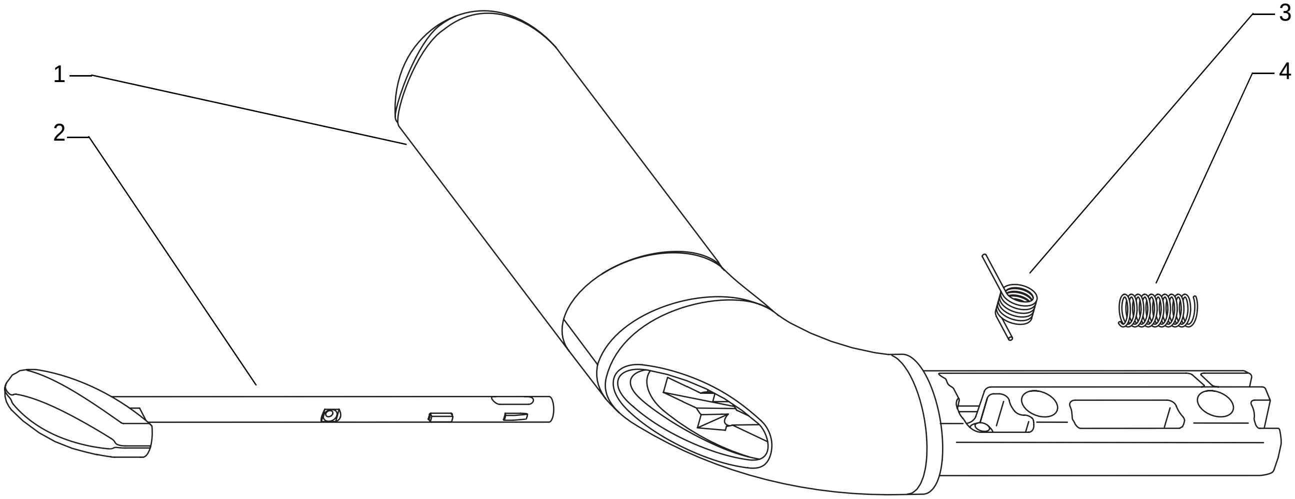


Brake Handle Assembly

Part No: 77.0104.01

Item	Part Number	Description
1	77.0104.00	Handle (part of 77.0104.01 handle assembly)
2	77.0163.00	Brake button (part of 77.0104.01 handle assembly)
3	013.121.00	Spring, torsion, stainless steel, .210 L, .030 W diameter (part of 77.0104.01 handle assembly)
4	013.120.00	Spring, compression, .240 OD x .560 (part of 77.0104.01 handle assembly)

Figure 125 **Brake Handle Assembly**

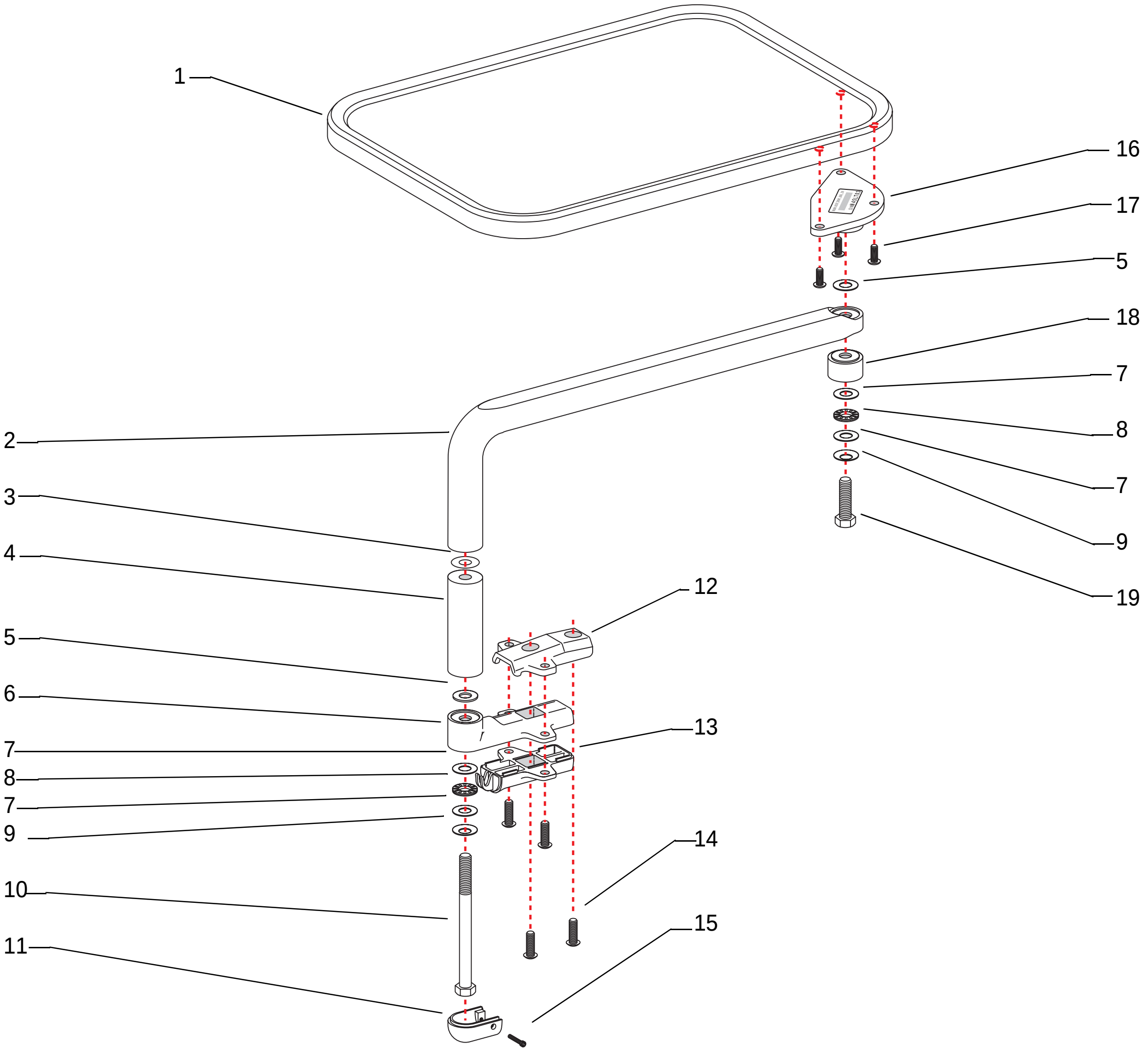


Traditional Tray Holder

Part No: Standard Tray Holder P/N 77.0294.00
Large Tray Holder P/N 77.0295.00

Item	Part Number	Description
1	75.0017.00	Tray holder, standard, Melamine, 10.3" x 14.3"
2	77.0189.00	Arm
3	004.021.00	Washer, flat fiber
4	77.0197.00	Arm extender
5	004.242.00	Washer, flat polyethylene, .387 ID
6	77.0194.00	Top base
7	004.172.00	Thrust washer
8	016.102.00	Thrust bearing
9	004.019.00	Spring washer
10	005.157.00	Hex head screw
11	77.0192.00	Elbow cover
12	77.0332.00	Base level
13	77.0196.00	Bottom base
14	005.026.00	Screw, 1/4-20 x 3/4"
15	002.024.00	Screw, socket head, 4-40 x 3/4"
16	77.0190.00	Bracket
17	005.012.03	Screw, button head socket, 10-32 x 3/8"
18	77.0198.00	Screw cover
19	002.023.01	Screw, hex head, 3/8-16 x 1-1/4"

Figure 126 **Traditional Tray Holder**


1
16
17
5
18
7
8
7
9
19
2
3
4
5
6
7
8
7
9
10
11
12
13
14
15

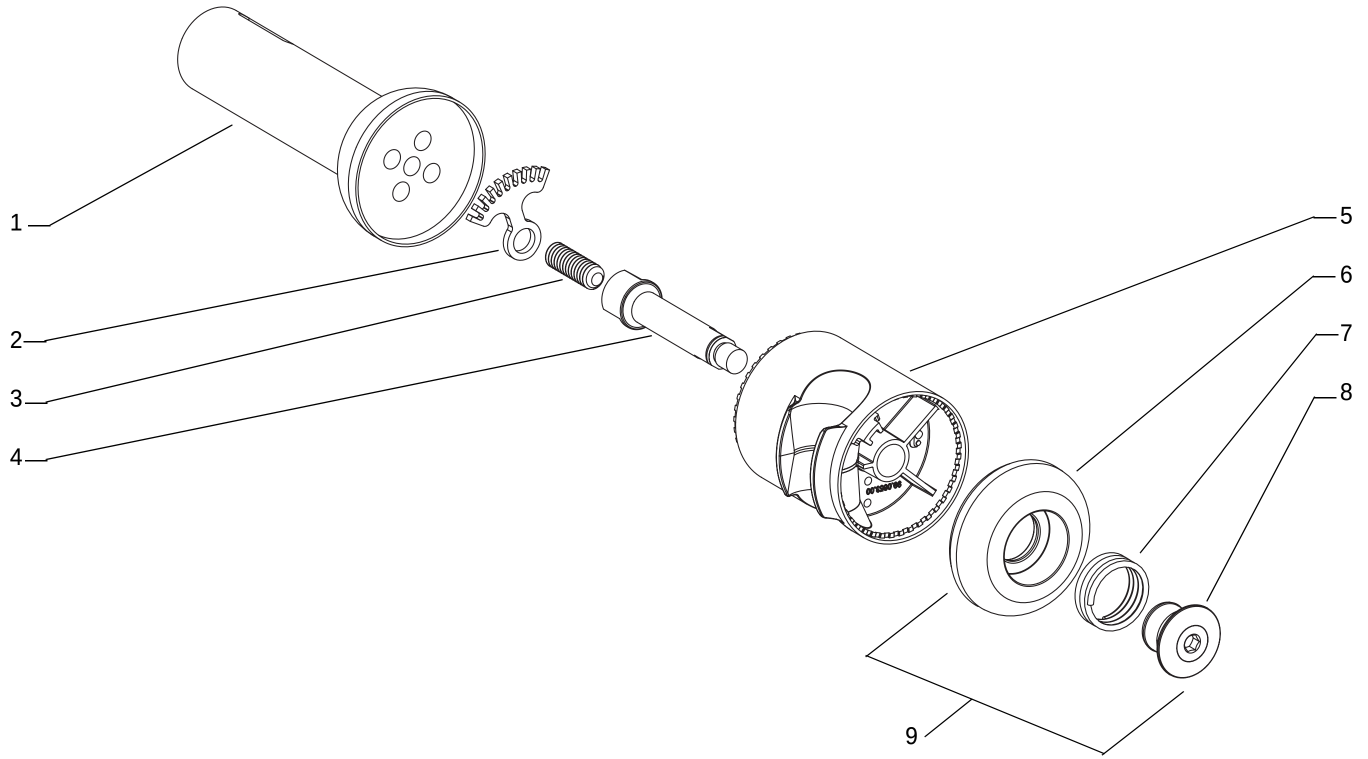
Holder (532,533 and 542)

Standard Accessory Holder

Part No: 99.0681.00

Item	Part Number	Description
1	99.0683.00	Mount hub
2	99.0686.00	Rotation stopper
3	007.023.00	Setscrew, 1/4-20 x 3/4" socket cup point
4	99.0660.00†	Axle (part of item 5)
5	99.0653.01	Holder kit, syringe/saliva ejector
6	99.0648.01	End cap assembly
7	013.011.00	Spring, compression, .760 OD x .47 FL
8	99.0659.00	Nut, end cap, holder
9	99.0648.01	End cap assembly

Figure 127 **Standard Accessory Holder**

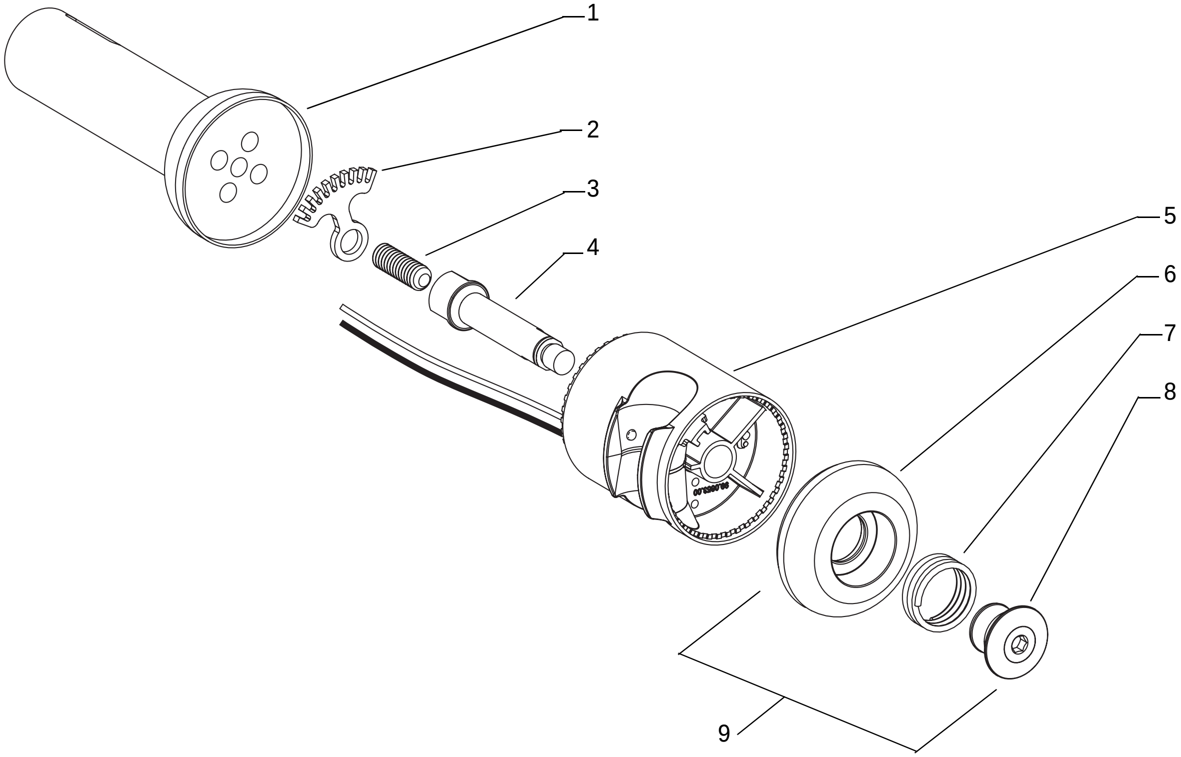


Auto-Electric Accessory Holder

Part No: 99.0684.00

Item	**Part Number**	**Description**
1	99.0683.00	Mount hub
2	99.0686.00	Rotation stopper
3	007.023.00	Setscrew, 1/4-20 x 3/4" socket cup point
4	99.0660.00†	Axle
5	99.0673.01	Holder kit, auto-electric International, saliva ejector
6	99.0648.00	End cap (part of item 9)
7	013.011.00	Spring, compression, .760 OD x .47 FL (part of item 9)
8	99.0659.00	Nut, end cap, holder (part of item 9)
9	99.0648.01	End cap assembly

Figure 128 **Auto-Electric Accessory Holder**

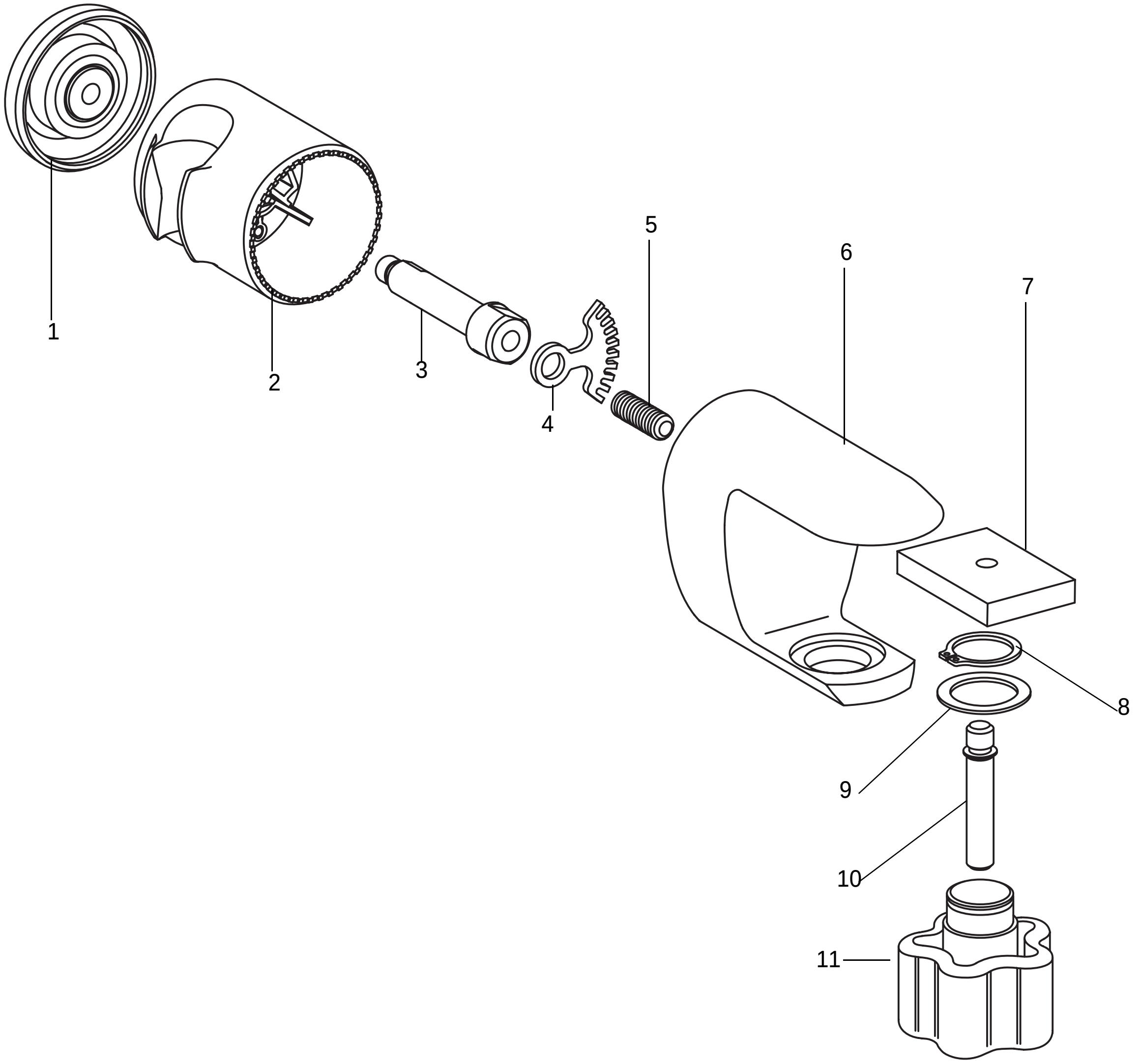


Holder (541 and 545)

Flex-Holder

Item	Part Number	Description
1	99.0648.01	End cap, holder assembly, assistant arm, over the counter
2	99.0650.01	Holder, domestic, HVE, standard kit
	99.0652.01	Holder, 11 mm/15 mm, HVE, assistant's arm kit
	99.0653.01	Holder, SE/syringe, kit
3	99.0660.00	Axle, holder assembly, assistant's arm
4	99.0686.00	Rotation stopper, auxiliary holder
5	007.023.00	Setscrew, socket cup point, 1/4-20 x 3/4
6	77.0441.00†	Clamp, holder (replace with 99.0717.00)
7	77.0444.00†	Clamp jaw, holder (replace with 99.0718.00)
8	010.075.00	Retaining ring, ext. 62 ID
9	004.201.00	Washer, flat, stainless steel, .631 I.O.
10	77.0443.00†	Stud, holder, clamp (replace with 99.0718.00)
11	77.0442.00	Knob, holder, clamp

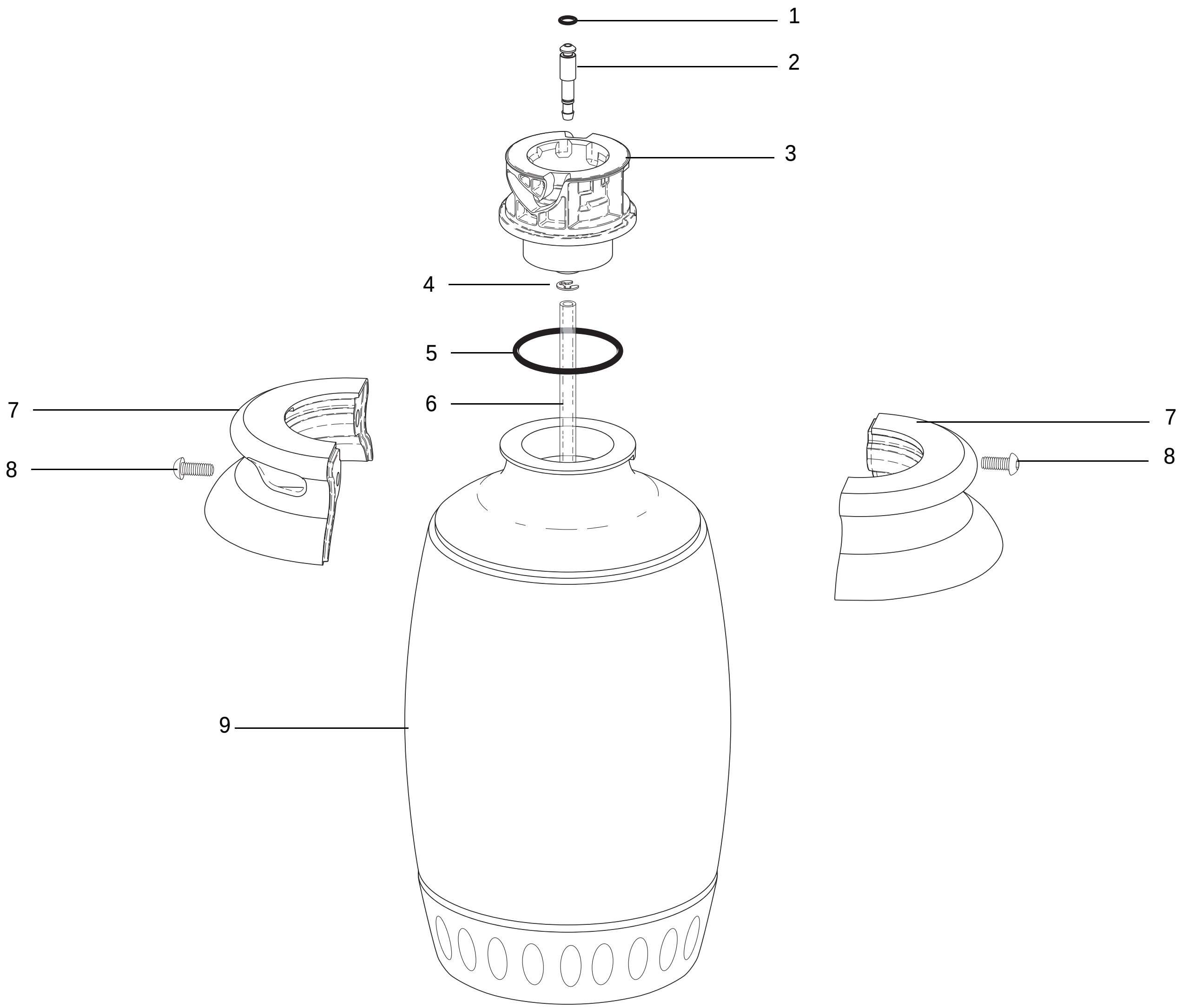
Figure 129 **Flex-Holder**


1
2
3
4
5
6
7
8
9
10
11

Self-Contained Water Bottle

Item	Part Number	Description
1	035.048.01	O-ring, .114 ID x .070, package of 10
2	14.0457.00†	Connector, water (replace with 14.0468.00)
3	14.0453.00†	Receptacle (replace with 14.0468.00)
4	010.002.00	Retaining ring, external tooth, .187" ID
5	031.130.01	O-ring, N, 1.612 ID x .103 W, package of 10
6	14.0467.00	Tube, supply, 8" long
7	14.0458.00	Clamp, water bottle
8	005.110.00	Screw, button head socket, 10-32 x 1/2
9	14.0466.00	Water bottle with base

Figure 130 **Self-Contained Water Bottle**



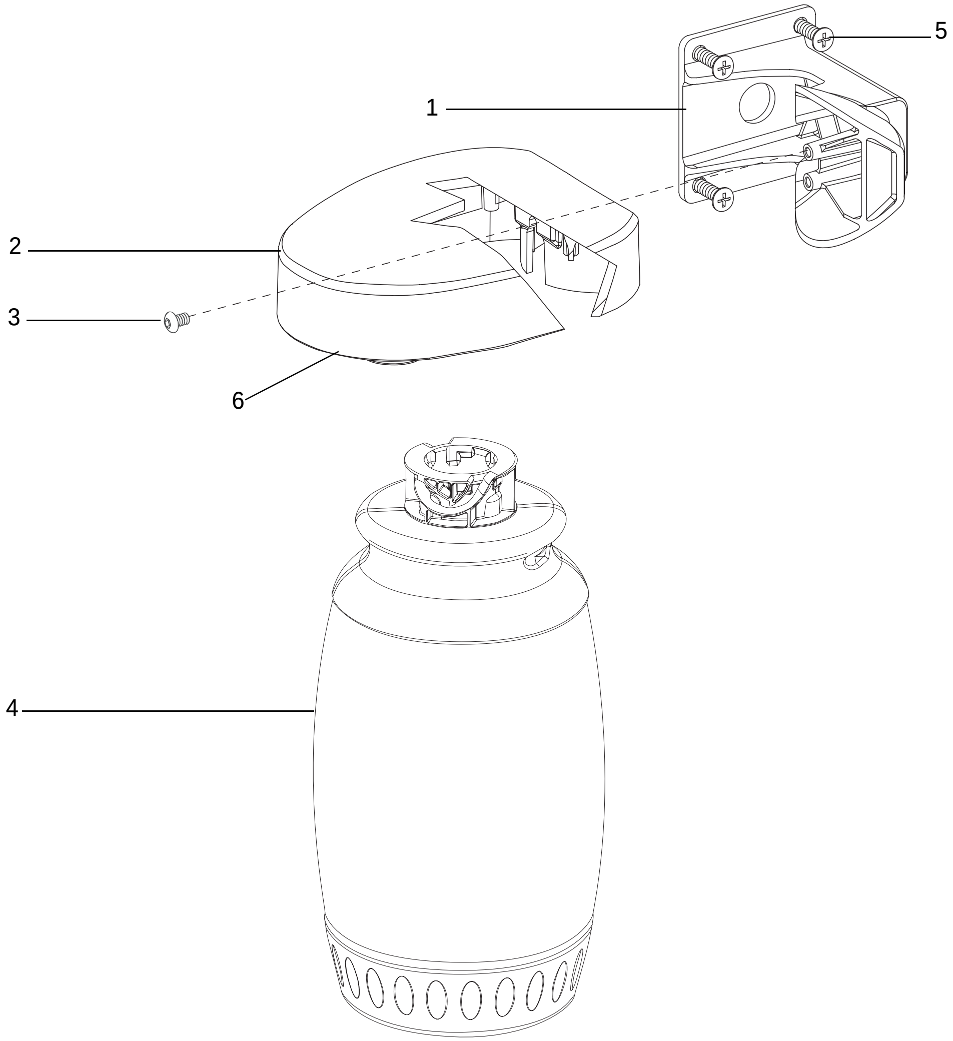
Self-Contained Water Bottle Housing (Cabinet-Mounted)

Item	Part Number	Description
1	77.0420.01	Casting bracket
2	14.0455.02	Housing, bottle
3	001.253.00	Screw, button head socket, 10-32 x 3/8, stainless steel
4	14.0468.00	Bottle assembly, water
5	003.071.00	Screw
6	90.1101.00	Receptacle assembly

These available Self-Contained Water Bottle kits are suited for use in various mounting locations:

Part Number	Description	Items Included
14.0464.00	Kit, water bottle (532, 533)	Includes: items 2-4 and 6
14.0464.01	Kit, water bottle, Slimline	Includes: items 4 & 6
14.0464.02	Kit, water bottle (561)	Includes: items 4 & 6
14.0471.00	Kit, water bottle, remote mount	Includes: items 1-6

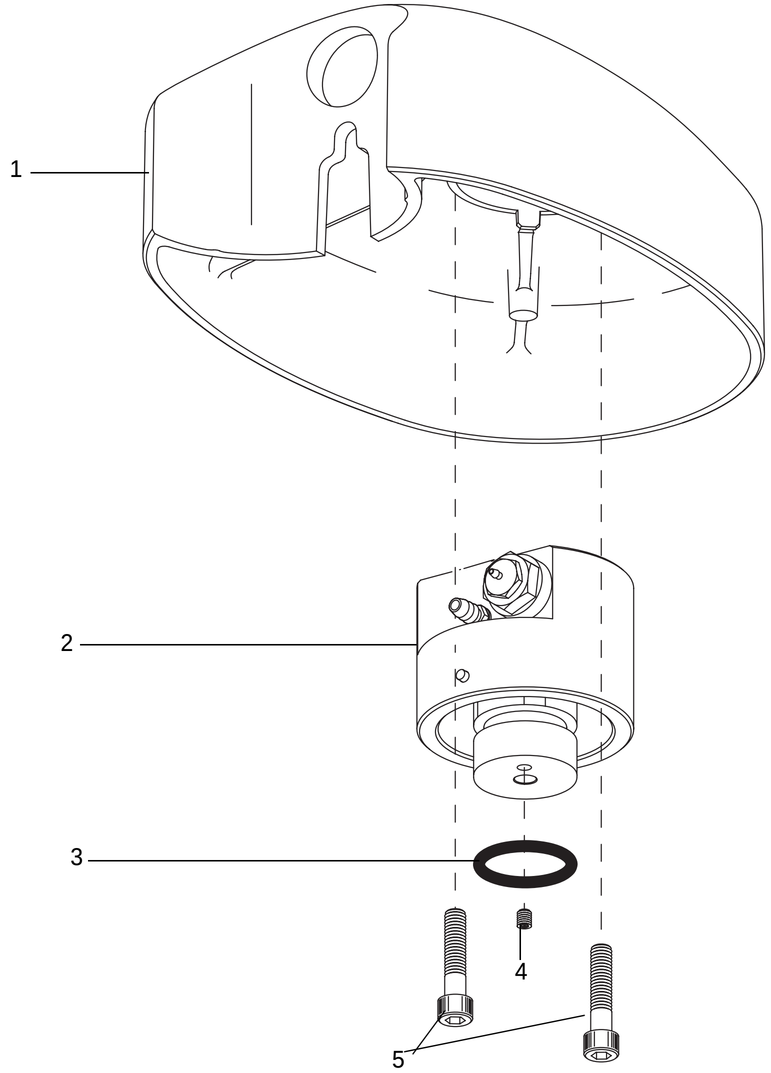
Figure 131 **Self-Contained Water Bottle Housing (Cabinet Mounted)**



Self-Contained Water Bottle Housing (Chair-Mounted)

Item	Part Number	Description
1	14.0455.02	Casting, housing, water bottle
2	90.1101.00	Receptacle assembly
3	034.213.00	O-ring, E, .921 ID x .139 W
4	023.809.00	Setscrew, restrictor, 10-32
5	002.112.00	Screw, 10-32 x 7/8, socket head screw

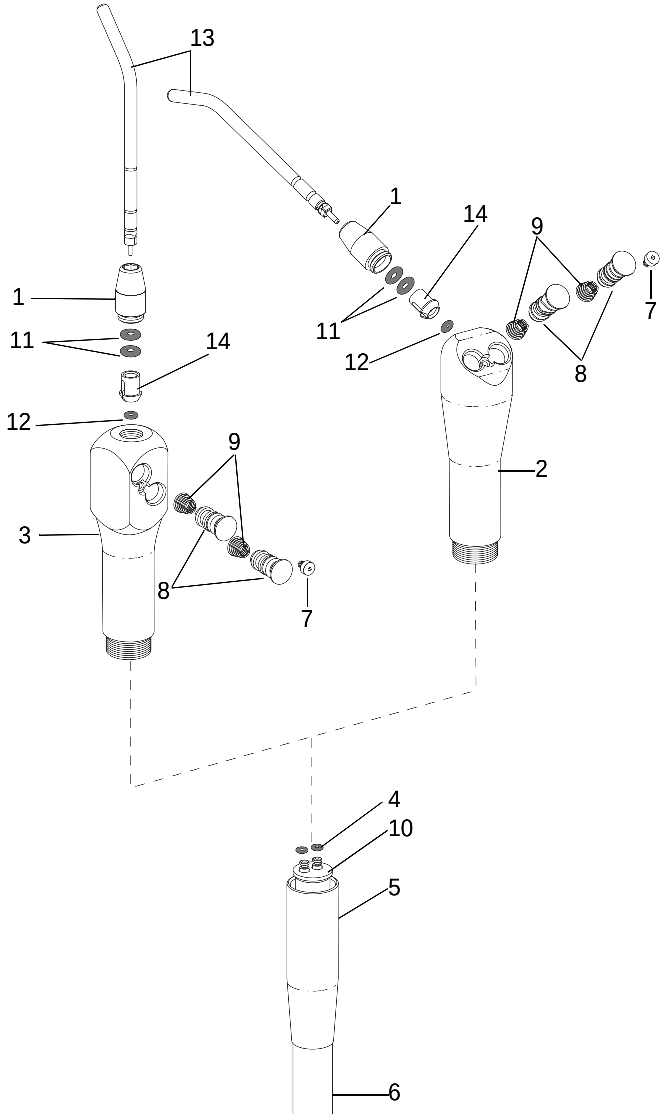
Figure 132 **Self-Contained Water Bottle Housing (Chair Mounted)**



Traditional and Continental Syringes

Item	Part Number	Description
1	23.1112.00	Nut assembly, syringe, smooth
2	23.1190.00	Syringe head, Traditional
3	23.1097.00	Syringe head, Continental
4	030.002.02	O-ring, package of 10
5	23.1015.00	Syringe handle
6	024.194.00	Tubing assembly, 7'
7	23.1193.01	Screw, 2-56, package of 5
8	23.1232.01	Valve, assembly button, autoclavable, package of 2
9	013.064.01	Spring, compression, conical, package of 10
10	23.1110.00	Terminal, 2 barb assembly, No-Quick Disconnect
11	035.048.01	O-ring, E, .114 ID x .07 W, package of 10
12	034.003.01	O-ring, E, .056 ID x .060 W, package of 10
13	23.0872.01	Syringe tip, package of 5
14	23.1101.00	Spacer, syringe nut

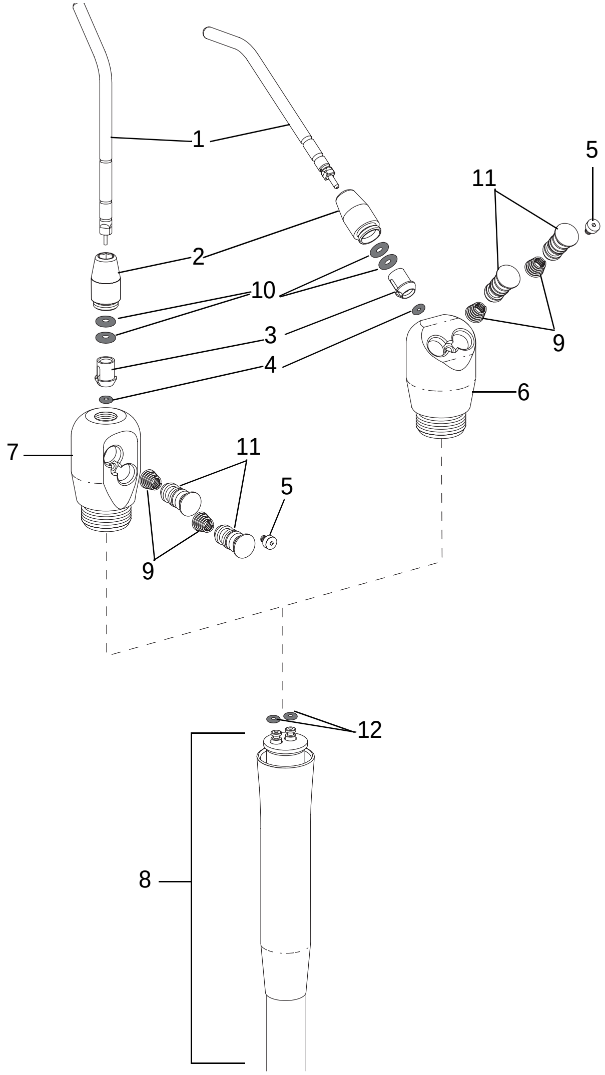
Figure 133 **Traditional and Continental Syringes**


13
1
14
9
7
1
11
11
14
12
12
8
2
9
3
8
7
4
10
5
6

Warm Water Traditional and Continental Syringes

Item	Part Number	Description
1	23.0872.01	Syringe tip, package of 5
2	23.1111.00	Syringe nut, smooth
3	23.1101.00	Spacer, syringe nut
4	034.003.00	O-ring, EP, .056 ID x .060W, package of 10
5	23.1193.00	Screw, 2-56, syringe, package of 5
6	23.1278.00	Warm water Traditional syringe head kit
7	23.1277.00	Warm water Continental syringe head kit
8	23.1276.01	Tubing assembly with syringe handle (Traditional & Continental) quick disconnect
8	23.1279.01	Tubing assembly with syringe handle (Assistant’s Model 551) quick disconnect
8	23.1282.01	Tubing assembly with syringe handle (Assistant’s Model 545) quick disconnect
9	013.064.01	Spring, compression, conical, package of 10
10	035.048.01	O-ring, .114 ID x .070 W, package of 10
11	23.1232.01	Valve, assembly button, autoclavable, package of 2
12	030.002.02	O-ring, package of 10

Figure 134 **Warm Water Traditional and Continental Syringe**



Autoclavable HVE Standard and 11/15 mm

Common Components

Item	Part Number	Description
1	11.1071.00	Body, autoclavable HVE
2	11.1074.00	Rotor assembly with O-rings
3	11.0998.01	Screen, spring clip, QD, HVE, package of 5
4	034.014.01	O-ring, E, .489 ID x .070 W, package of 10
5	034.013.01	O-ring, E, .426 ID x .070 W, package of 10
10	034.018.00	O-ring, .739 ID x .070 W

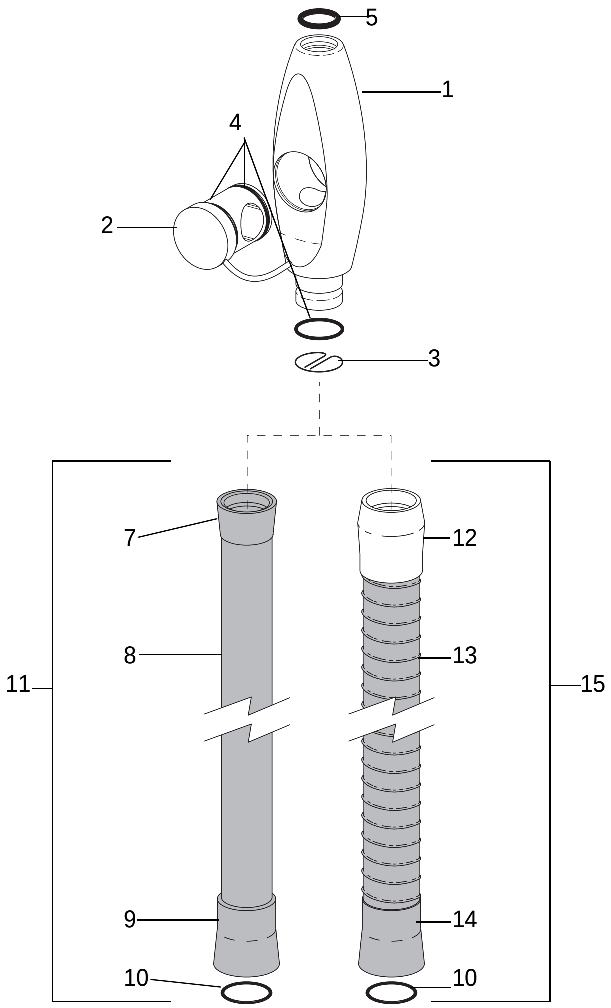
Standard - P/N 11.1296.00

Item	Part Number	Description
10	034.018.00	O-ring, .739 ID x .070 W
7	11.1027.00	Tailpiece, QD, short
8	024.144.00	Tubing, 1/2 ID (63")
9	11.1300.00	Tailpiece, standard HVE
11	12.1237.00	Standard HVE tubing assembly

11mm and 15mm - P/N 11.1305.00

Item	Part Number	Description
10	034.018.00	O-ring, .739 ID x .070 W
12	11.1272.00	Tailpiece, QD, HVE
13	024.190.00	Tubing, 16 mm ID, vac (63")
14	11.1301.00	Tailpiece, HVE, 15 mm
15	12.1239.00	11 mm HVE tubing assembly

Figure 135 **Autoclavable HVE Assembly**

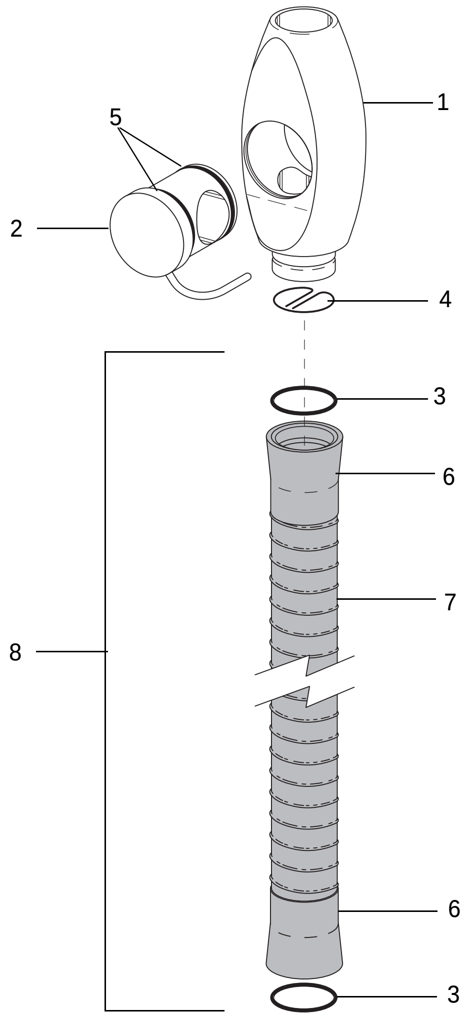


Autoclavable HVE with Large Bore 15mm (541 and 545)

Part No: P/N 11.1297.00

Item	Part Number	Description
1	12.1114.00	Body, autoclavable HVE, 15 mm
2	12.1116.00	Rotor assembly with O-rings
3	034.018.02	O-ring, E, .739 ID x. 070 W, package of 10
4	12.1109.00	Screen, spring clip, QD, 15mm
5	034.019.01	O-rings, E, .801 ID x .070 W, package of 10
6	11.1301.00	Tailpiece, HVE, 15 mm
7	024.190.00	Tubing, 16 mm, handpiece, vacuum
8	12.1238.00	Tubing

Figure 136 **Autoclavable HVE Assembly**



Autoclavable Saliva Ejector

Common Components

Item	Part Number	Description
1	034.107.01	O-ring E, .206 ID x .103 W, package of 10
2	034.012.01	O-ring E, .364 ID x .070 W, package of 10
3	12.1089.00	Body, with valve
4	12.1093.00	Rotor assembly, with O-rings
8	034.018.02	O-ring, package of 10

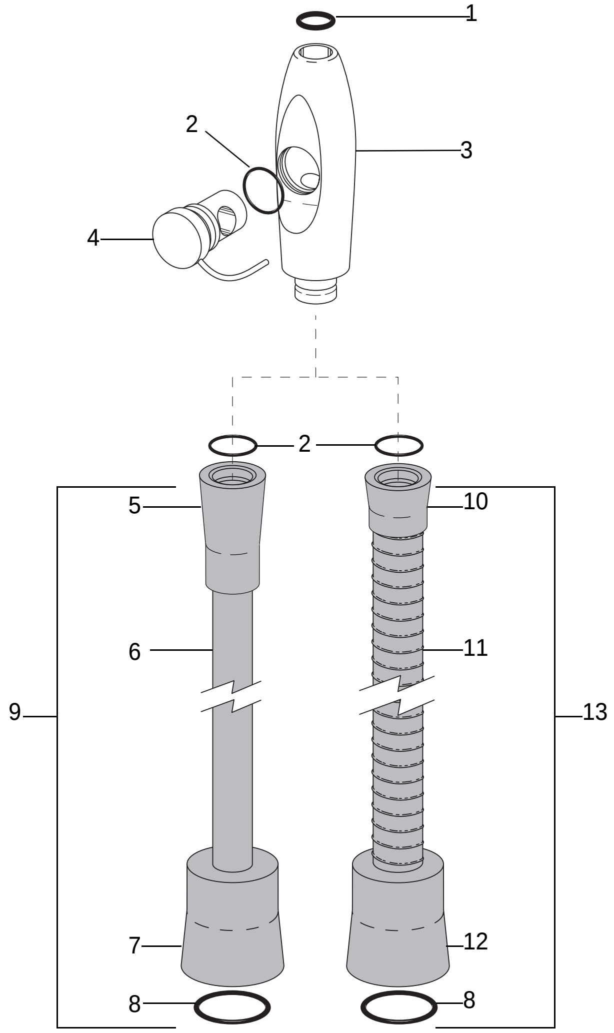
Standard - P/N 12.1235.00

Item	Part Number	Description
5	12.1229.00	Tailpiece
6	024.142.00	Tubing (63")
7	11.1303.00	Tailpiece
9	11.1306.00	Tubing assembly

10mm - P/N 12.1236.00

Item	Part Number	Description
10	11.1283.00	Tailpiece
11	024.197.00	Tubing (63")
12	11.1302.00	Tailpiece
13	11.1307.00	Tubing assembly

Figure 137 **Autoclavable Saliva Ejector**



ASSISTANT'S INSTRUMENTATION

The A-dec 551 assistant's instrumentation is equipped with either a short or long assistant's arm for easy positioning of instrumentation. Both arms are equipped with a touchpad and a holder assembly with independent positioning features. The solids collector, located at the base of the arm, is also a part of the assistant's instrumentation.

The A-dec 545 assistant's instrumentation is floor-mounted and installs with a variety of Preference Collection and Preference Slimline cabinets. The standard configuration for 545 has a height-adjustable round worksurface, multi-position assistant's instrument holder, autoclavable saliva ejector, autoclavable syringe (option of warm water syringe), autoclavable HVE (choice of single/dual), 2-liter self-contained water system with quick-disconnect water bottle, solids collector, standard multi-function touchpad (optional) and no touchpad (optional).

ASSISTANT'S INSTRUMENTATION CONTENTS

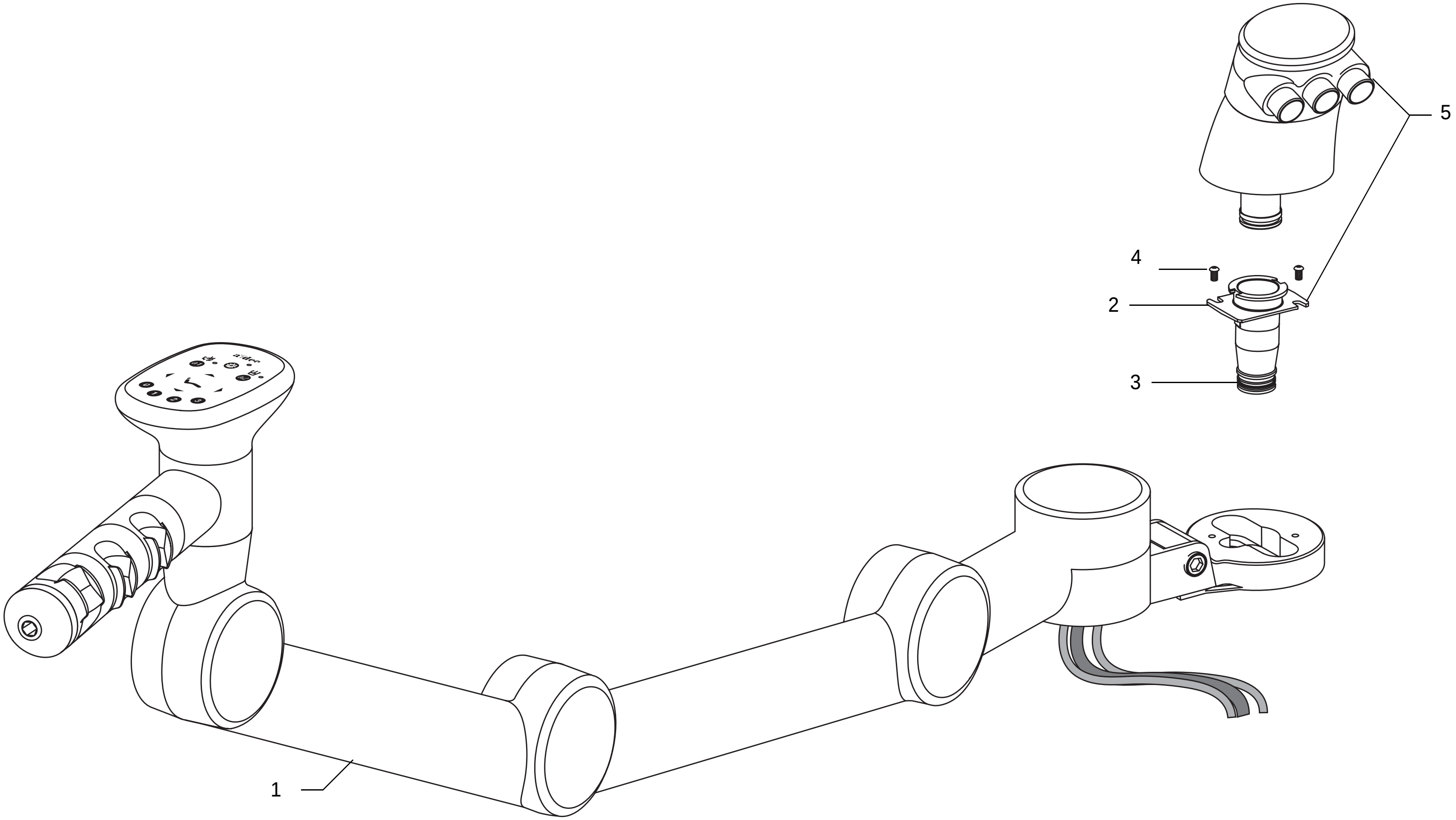
- **Product Overview (551), page 224**
- **Flow Diagrams (551), page 232**
- **Adjustments (551), page 234**
- **Product Overview (545), page 235**
- **Flow Diagram (545), page 239**
- **Leveling (545), page 241**
- **Adjustments (545), page 244**

PRODUCT OVERVIEW (551)

Components

Item	Description
1	Long arm with single 3 position, standard holder
	Long arm with single 4 position, standard holder
	Long arm with dual 2 position, standard holder
	Short arm with single 3 position, standard holder
	Short arm with single 4 position, standard holder
	Short arm with dual 2 position, standard holder
2	Vacuum pipe kit
3	O-ring, red, package of 10
4	Screw, buttonhead socket, 10-32 x 1/4"
5	Vacuum connector kit

Figure 138 **551 Assistant’s Long Arm Assembly with a Single 3 Position Holder Assembly**



Holders

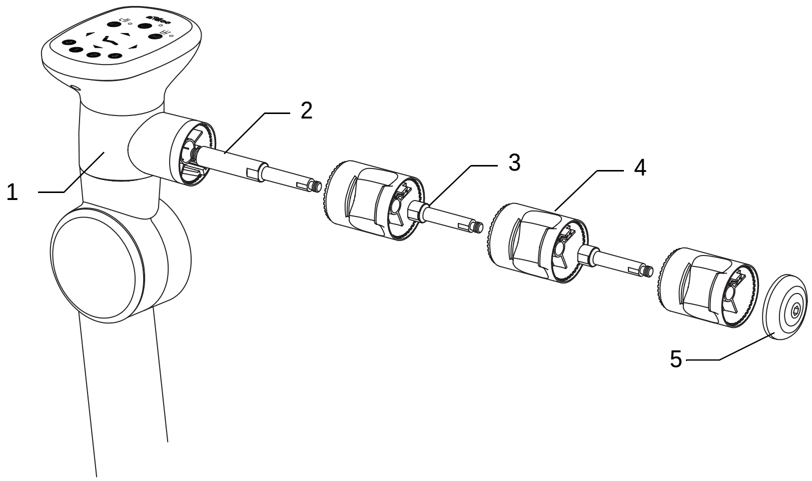
There are two types of assistant's holders, standard and electric.

Standard Holder

The touchpad does not need to be removed when disassembling the standard holder.

Item	Description
1	Turret
2	Turret insert
3	Axle (included with both items 4)
4	Holder, SE/syringe kit
	HVE standard kit
5	End cap assembly

Figure 139 **Standard Assistant's Holder Components**



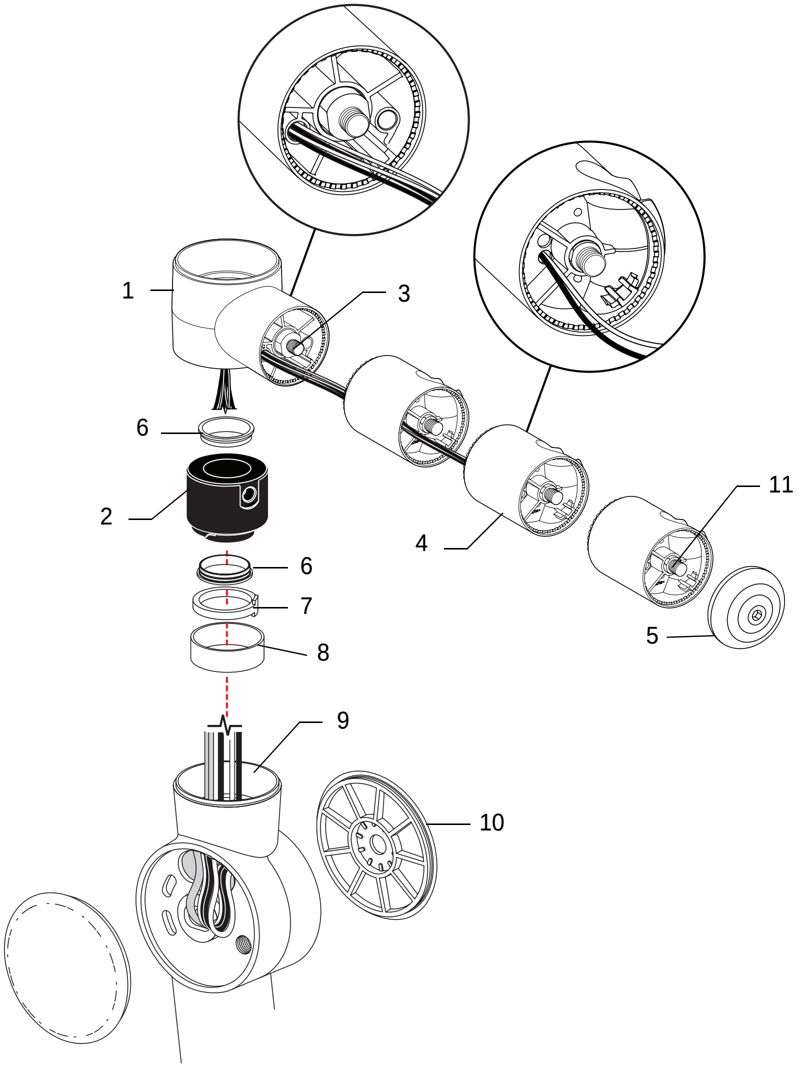
Electric Holder

Each handpiece in the holder assembly automatically activates when you lift it from its holder.

The electric holders provide vacuum On/Off switching for users whose vacuum system requires this functionality. The vacuum pump activates automatically when you lift the high volume evacuator (HVE) or saliva ejector (SE) from the holder. The vacuum turns off when you place the HVE or SE back into the holder.

⚠ **CAUTION** When reassembling the electric holder, rotate all holders, holder assemblies and the touchpad to ensure there is enough service loop in the wires to prevent them from breaking.

Figure 140 **Electric Assistant's Holder Components**



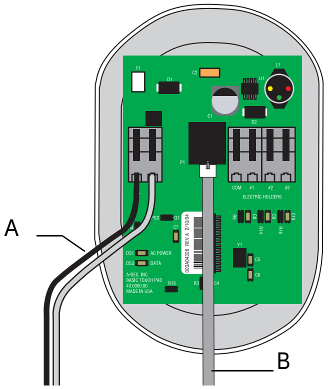
Item	Description
1	Turret
2	Inner hub
3	Turret insert
4	Holder, SE electric holder kit
	Holder, HVE electric holder kit, 11mm, 15mm
5	End cap assembly
6	Bearing
7	Stop
8	Spacer
9	Head mount
10	Knuckle cover
11	Axle

Assistant's Touchpad

The assistant's instrumentation uses a standard touchpad that serves as a single touch surface for controlling the chair, dental light, and cuspidor or A-dec relay module(s). The touchpad can rotate 340° for access and visibility.

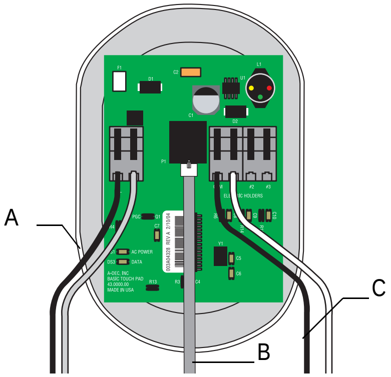
Item	Description
1	Standard touchpad with circuit board
2	Touchpad base
3	Cable tie, package of 10
4	Cable bushing
5	Bolt
6	Spline
7	Washer, Nylatron
8	Screw, socket head, 4-40 x 1/4"
9	Washer, wave
10	Washer

Figure 141 **Assistant's Touchpad with Standard Holder Connections**



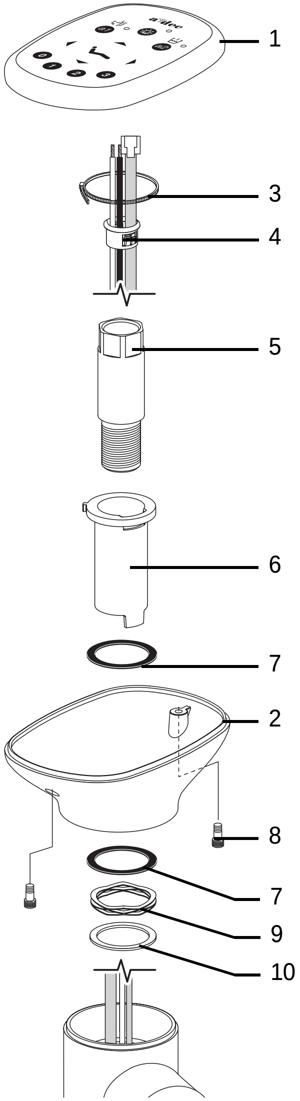
(A) 24 VAC; (B) Data Line

Figure 142 **Assistant's Touchpad with Electric Holder Connections**



(A) 24 VAC; (B) Data Line; (C) Electric Holder

Figure 143 **Electric Assistant's Touchpad Components**



Solids Collector

The solids collector screen prevents solids from entering the central vacuum system when the high volume evacuator (HVE) or saliva ejector (SE) are used. A regularly maintained solids collector is necessary for optimal performance of the vacuum system. If the vacuum system performance is less than optimal, verify that the screen has been replaced.

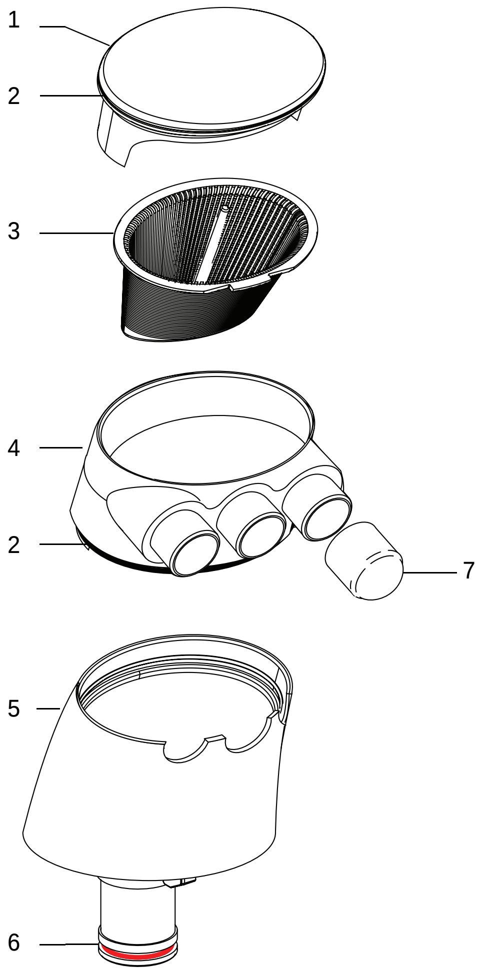
CAUTION Use appropriate gloves when handling contaminated parts.

Solids Collector Removal

1. Lift off the screen, and cap, then twist off the triple vacuum connector.
2. Turn the vacuum tower base to face the back of the chair and lift up.

Item	Description
1	Vacuum tower cap
2	O-ring, package 10
3	Screen, package 10
4	Connector, triple vacuum
5	Vacuum tower base with funnel
6	O-ring, red, package 10
7	Cap

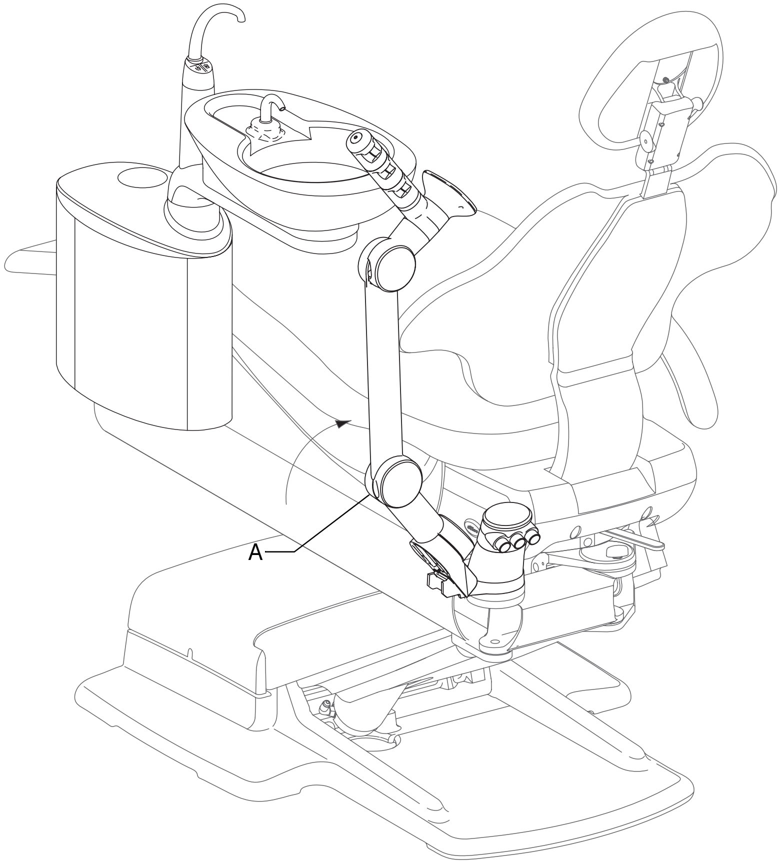
Figure 144 **Solids Collector Components**



Tip-Up Feature

The pivot joint, located close to the support link, allows the entire arm to tip up, when it contacts an object.

Figure 145 **551 Assistant's Arm Tip-Up Feature**



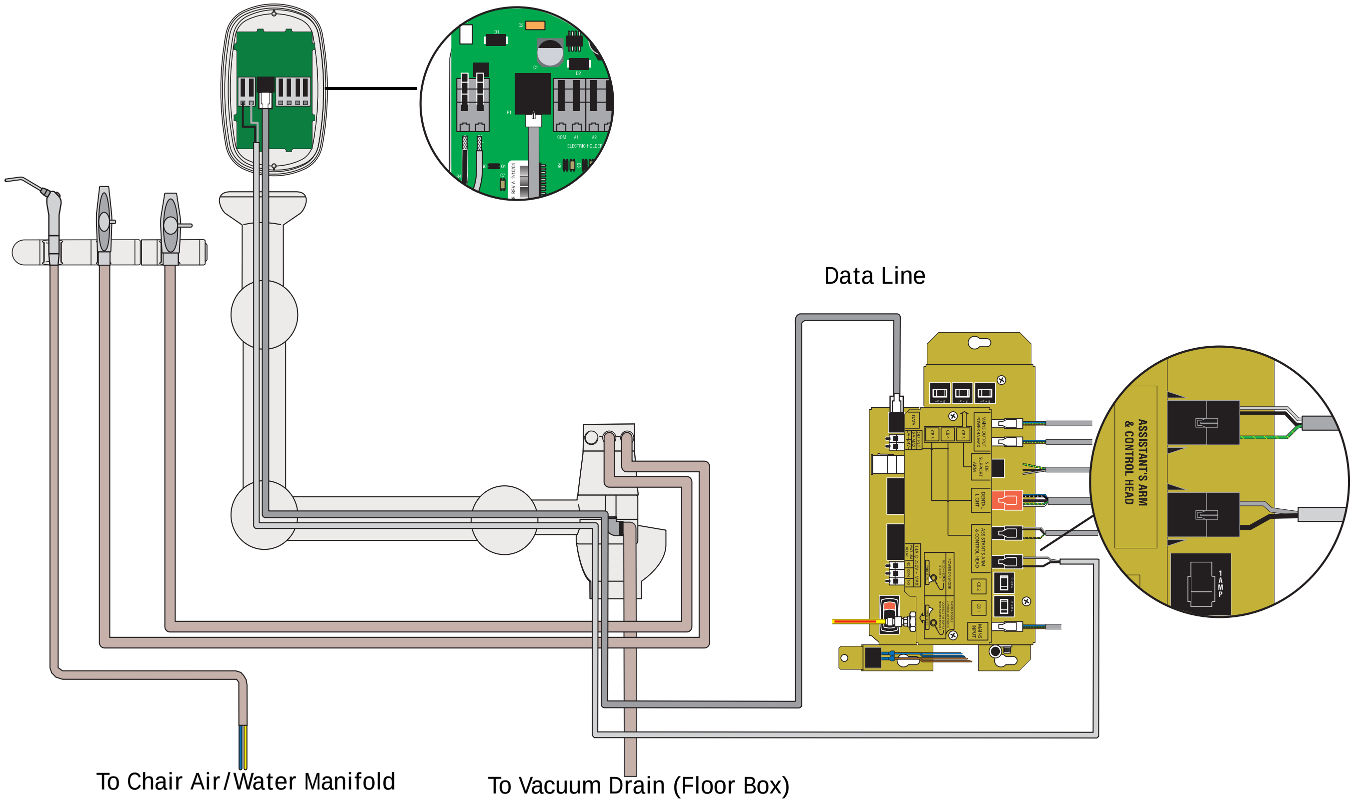
(A) Pivot Joint

Flow Diagrams (551)

Standard Holder

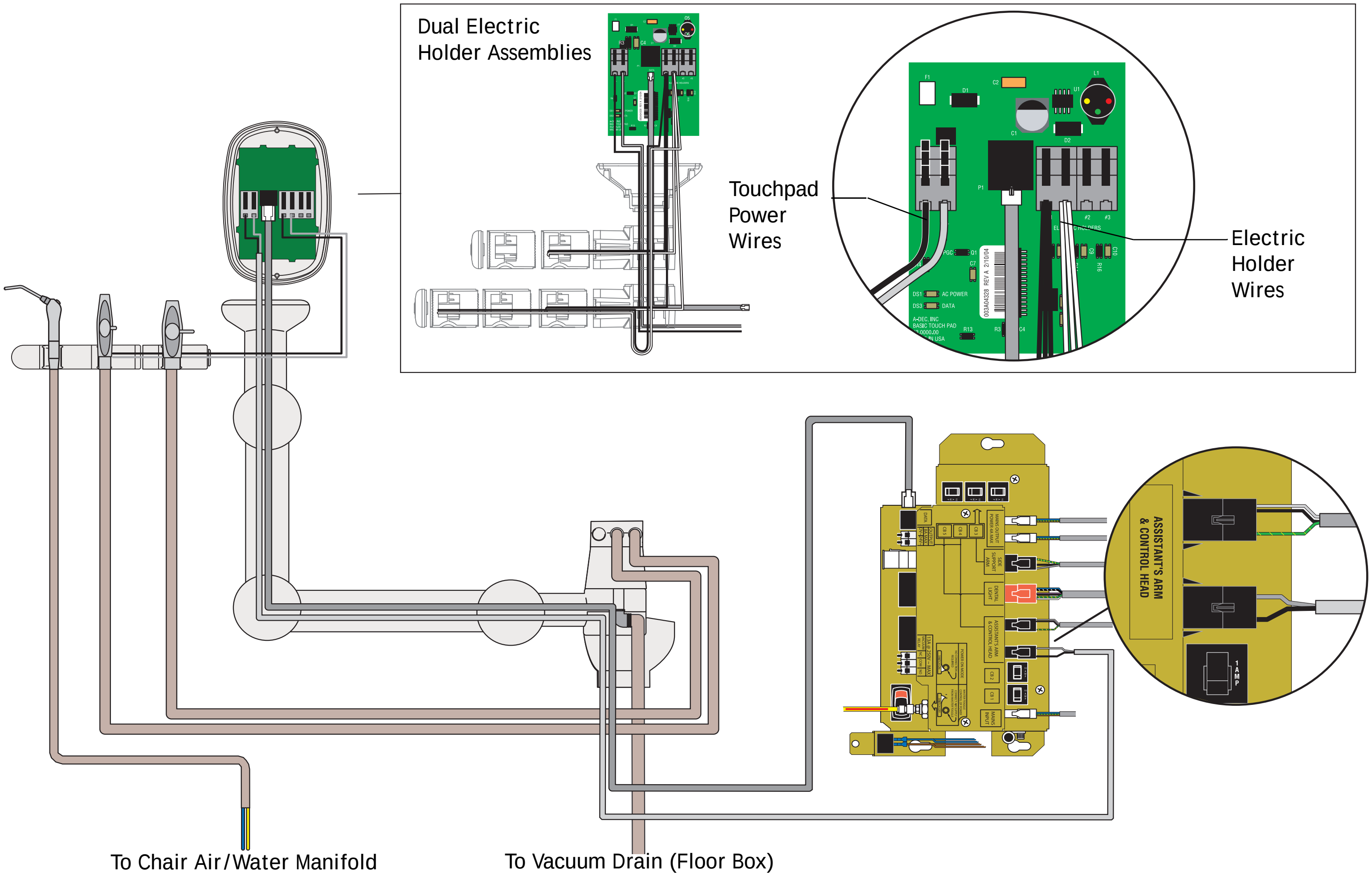
This flow diagram describes the plumbing and electrical connections of the 551 assistant's standard holder assembly and solids collector.

Figure 146 551 Assistant's Standard Holder Flow Diagram


Data Line
ASSISTANT'S ARM & CONTROL HEAD
1 AMP
To Chair Air/Water Manifold
To Vacuum Drain (Floor Box)

Electric Holder

This flow diagram describes the plumbing and electrical connections of the assistant's electric holder assembly and solids collector.


Dual Electric
Holder Assemblies
Touchpad
Power
Wires
Electric
Holder
Wires
ASSISTANT'S ARM
& CONTROL HEAD
1 AMP
To Chair Air/Water Manifold
To Vacuum Drain (Floor Box)

ADJUSTMENTS (551)

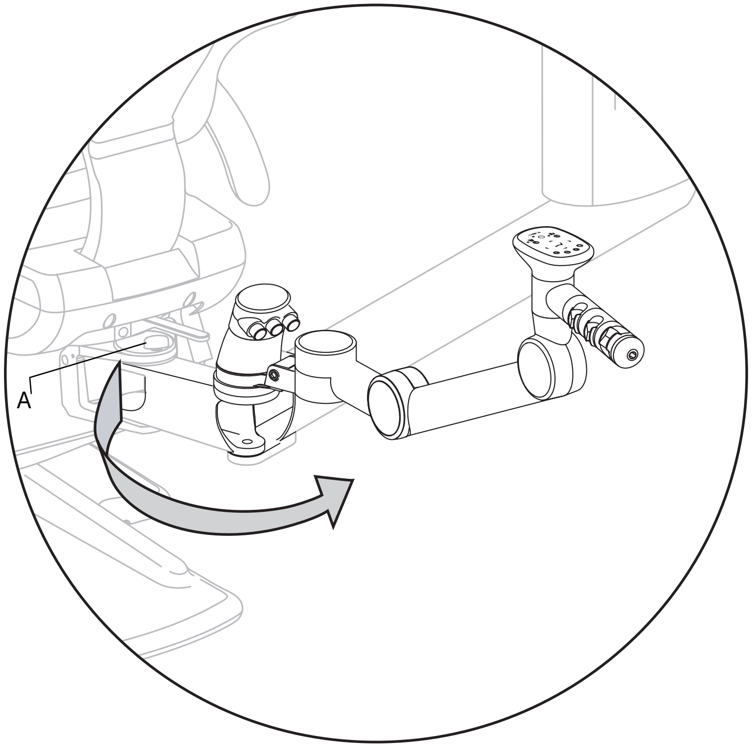
Left or Right Conversion

The assistant's instrumentation can be easily positioned to the opposite side of the chair.

To reposition the assistant's instrumentation:

1. Loosen the support link locking knob located under the swivel brake handle.
2. Unsnap the support link cover, and reposition the arm to the opposite side. If the support side system includes a support center, tip up the assistant's arm so the support center can swing past it when repositioning the assistant's arm.
3. Reattach the support link cover, and tighten the support link locking knob.

Figure 147 Reposition the Assistant's Arm



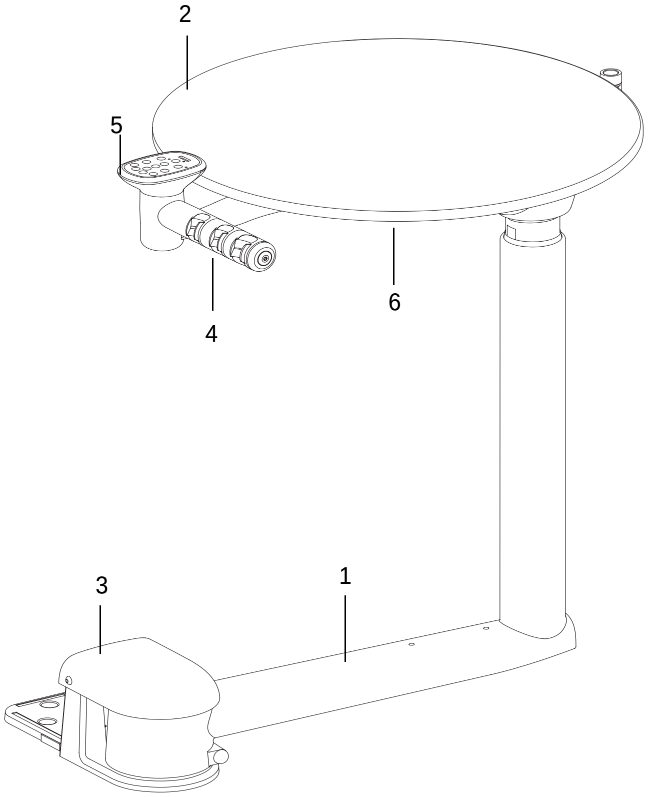
(A) Locking Knob

PRODUCT OVERVIEW (545)

Components

Item	Description
1	Arm assembly
2	Round worksurface
3	Hub mount
4	Assistant's holder (standard)
	Assistant's holder (electric)
5	Assistant's touchpad
6	Master On/Off toggle (under worksurface)

Figure 148 545 Assistant's Instrumentation



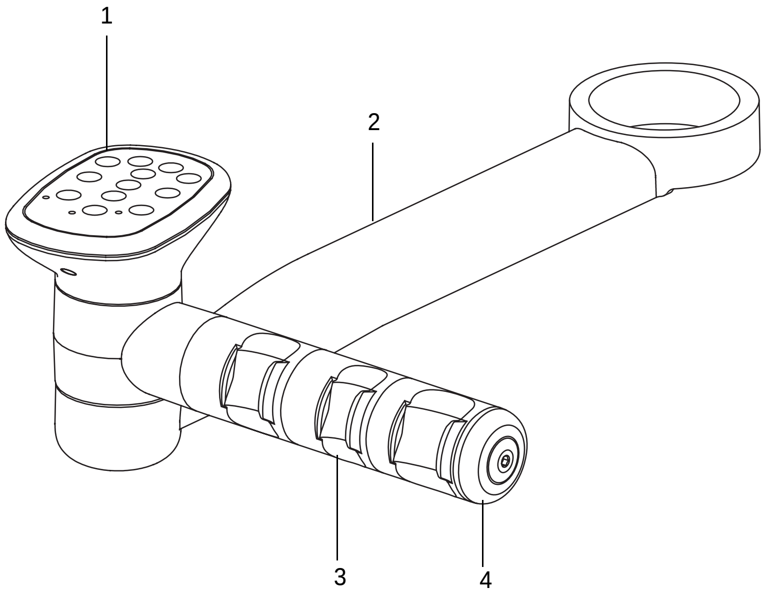
Holders

There are two types of holders, standard (non-active) and electric.

Standard Holder

Item	Description
1	Standard touchpad
2	Assistant’s arm assembly
3	Assistant’s holder assembly
4	End cap

Figure 149 **Standard Holder Assembly**



Electric Holder

Each handpiece in the holder assembly automatically activates when you lift it from its holder.

The electric holders provide vacuum On/Off switching for users whose vacuum system requires this functionality. The vacuum pump activates automatically when the you lift the high volume evacuator (HVE) or saliva ejector (SE) from the holder. The vacuum turns off when you place the HVE or SE back into the holder.

⚠ **CAUTION** When reassembling the electric holder, rotate all holders, holder assemblies and the touchpad to ensure there is enough service loop in the wires to prevent them from breaking.

Figure 150 **Single Electric Holder Assembly**

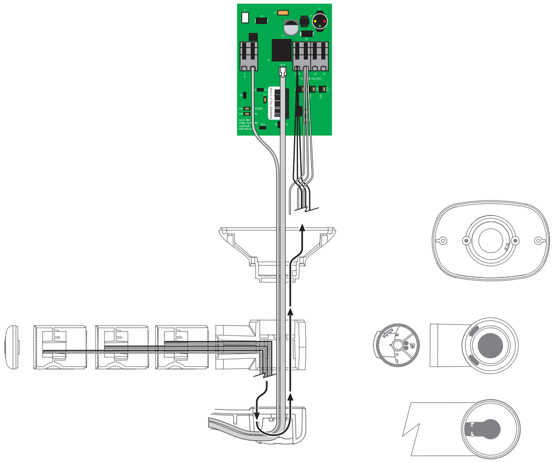
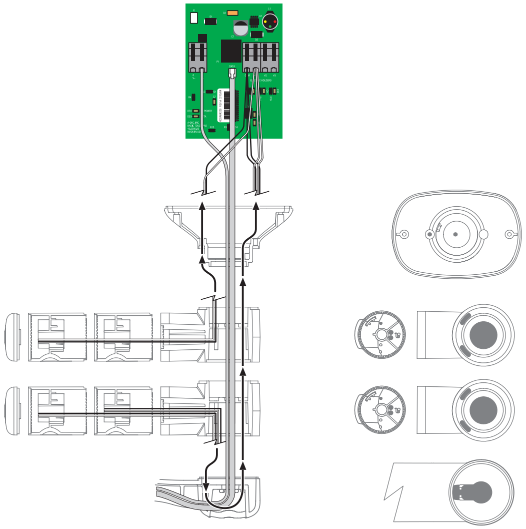


Figure 151 **Dual Electric Holder Assembly**



Solids Collector

The solids collector screen prevents solids from entering the central vacuum system when the High Volume Evacuator (HVE) or Saliva Ejector (SE) is used. A regularly maintained solids collector is necessary for optimal performance of the vacuum system. If the vacuum system performance is less than optimal, verify that the screen has been replaced.

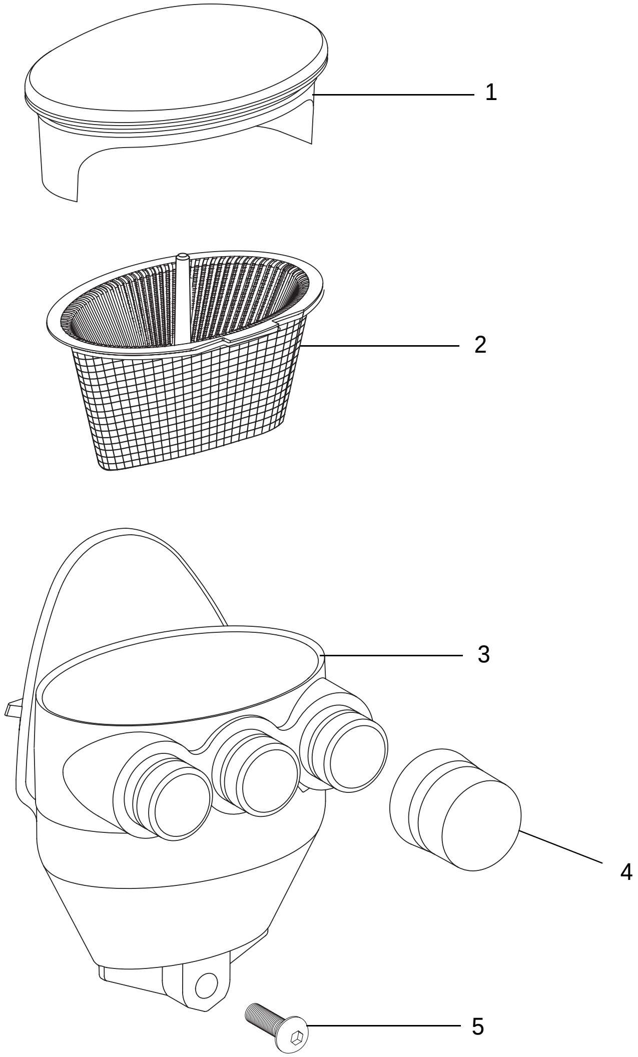
CAUTION Use appropriate gloves when handling contaminated parts.

Remove Solids Collector and Replace Screen

1. Turn off vacuum or open the HVE control valve.
2. Remove the solids collector cap.
3. Remove the solids collector screen.
4. Discard the screen according to local regulations
5. Insert new screen in the collector and replace the cap.

Item	Description
1	Solids collector cap
2	Solids collector screen
3	Vacuum canister base
4	Connector cap
5	Screw

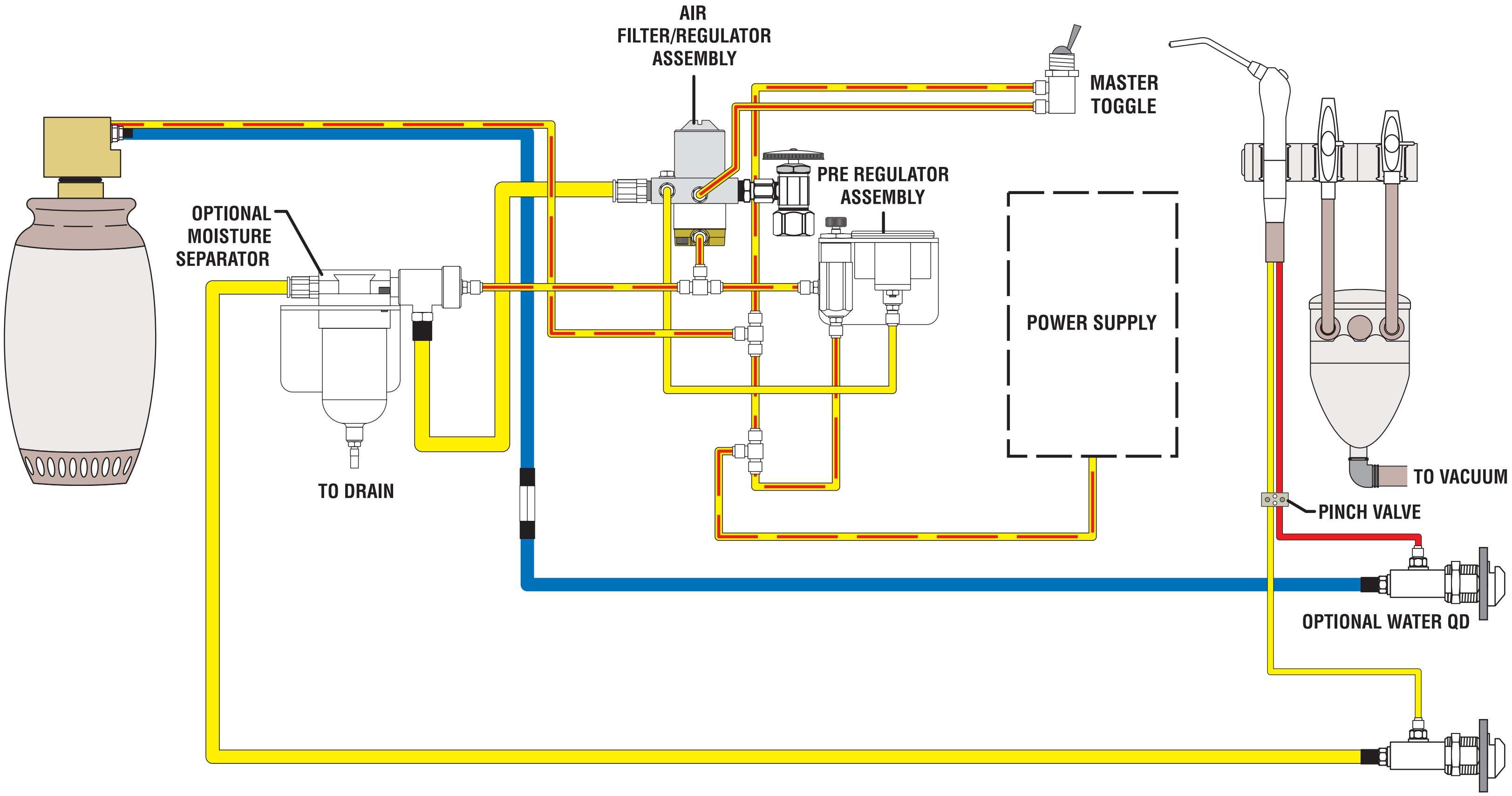
Figure 152 **Solids Collector**



FLOW DIAGRAM (545)

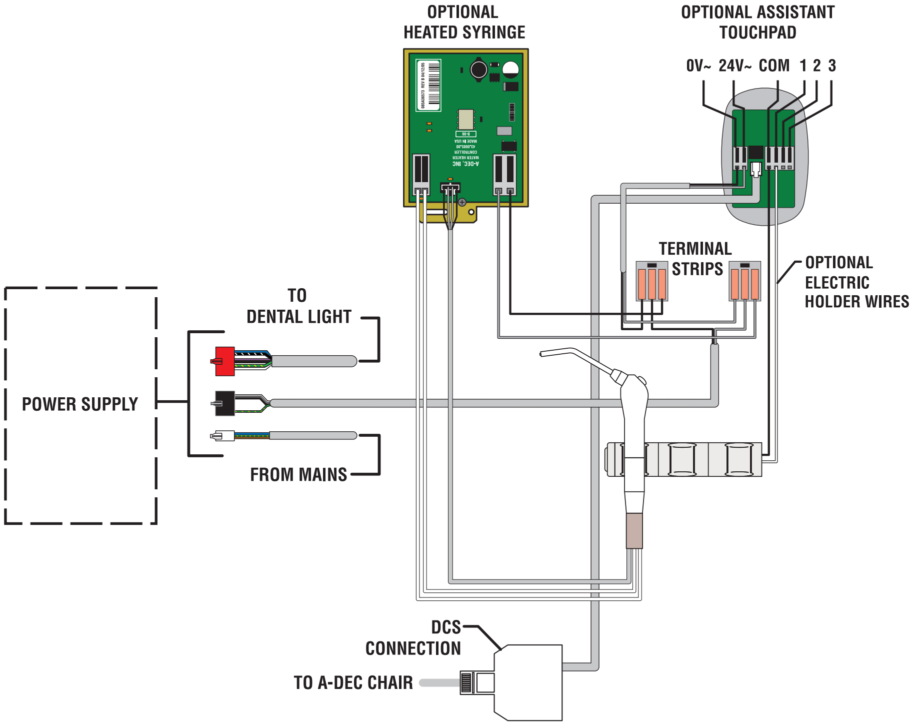
Plumbing Diagram

Figure 153 **545 Plumbing Flow Diagram**


AIR FILTER/REGULATOR ASSEMBLY
MASTER TOGGLE
PRE REGULATOR ASSEMBLY
OPTIONAL MOISTURE SEPARATOR
POWER SUPPLY
TO DRAIN
TO VACUUM
PINCH VALVE
OPTIONAL WATER QD

Plumbing Diagram

Figure 154 **545 Wiring Flow Diagram**


OPTIONAL HEATED SYRINGE
OPTIONAL ASSISTANT TOUCHPAD
0V~ 24V~ COM 1 2 3
TERMINAL STRIPS
OPTIONAL ELECTRIC HOLDER WIRES
TO DENTAL LIGHT
POWER SUPPLY
FROM MAINS
DCS CONNECTION
TO A-DEC CHAIR

LEVELING (545)

Arm Assembly

Front To Back

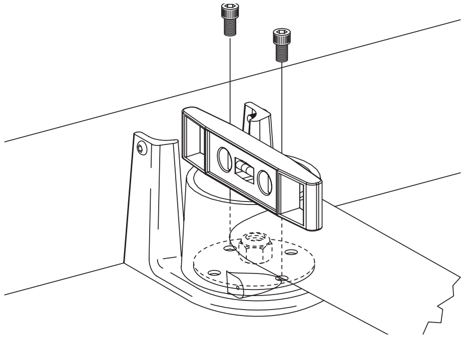
1. Position the arm perpendicular to the cabinet (see Figure 155).

NOTE Make sure the arm assembly is in line with the worksurface and perpendicular to the cabinet before leveling

2. Place the level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary.

TIP The support arm balances on a pivot. To raise or lower the long side of the arm, adjust the screw nearest the cabinet (see Figure 157). Once the arm is level, tighten the second screw to hold the arm in place.

Figure 155 **Leveling - Arm Assembly Leveling Front to Back**



Side To Side

1. Position the arm parallel to the cabinet (see Figure 156).
2. Place level on the hub, parallel to the arm.
3. Loosen and tighten the mounting screws as necessary (see Figure 157).

Figure 156 **Adjustment - Arm Assembly Leveling Side to Side**

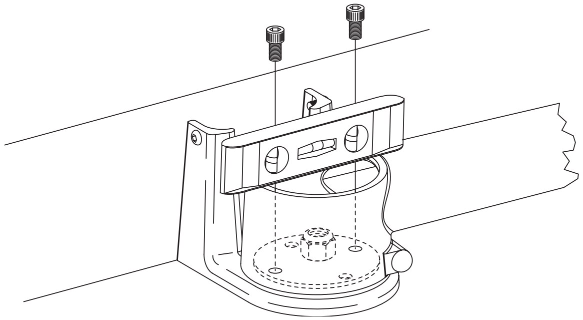
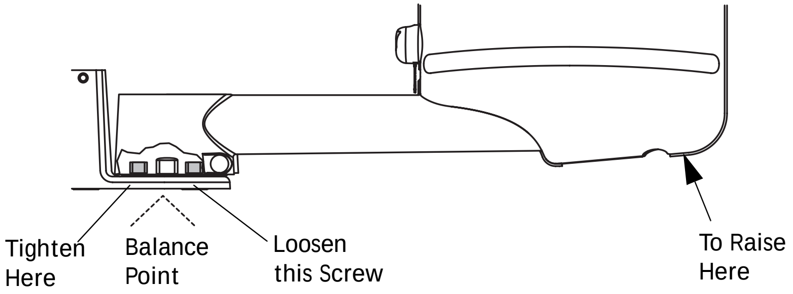


Figure 157 **Level the Hub**


Tighten Here
Balance Point
Loosen this Screw
To Raise Here

Worksurface

Level Round Worksurface

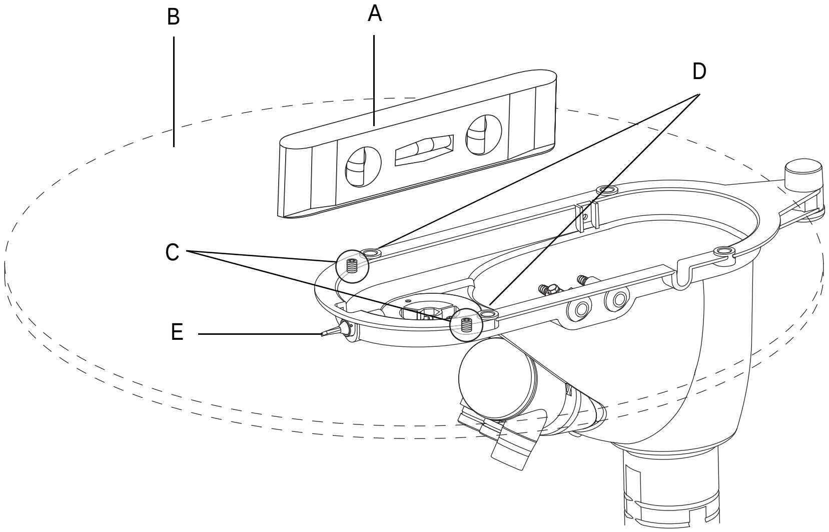
To level the round worksurface, adjust the two set screws in the worksurface support housing (see Figure 158) until the surface is level.

NOTE Ensure that the arm assembly is level before leveling the worksurface.

1. Place the worksurface arm in a typical working position and center a level on the round worksurface over the support housing (see Figure 158).
2. Loosen the worksurface screws on the side nearest the master on/off toggle.
3. Adjust the two setscrews in the worksurface support housing until the surface is level. Use a 1/8” hex key (see Figure 158).
4. Tighten the worksurface screws until the worksurface is secure.

NOTE Do not overtighten the worksurface screws, or the level may change.

Figure 158 Level Work Surface



(A) Level; (B) Worksurface; (C) Setscrew; (D) Worksurface Screws; (E) Master On/Off Toggle

ADJUSTMENTS (545)

Worksurface Height

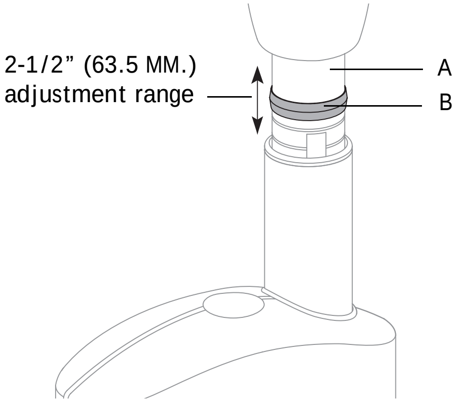
Worksurface and Instrumentation Arm Height

The A-dec 12 O'clock system has an arm you can adjust for efficient operation and comfort. To adjust the height of the worksurface or the instrumentation arm:

1. Lift the upper part of the vertical post.
2. Slide the height adjustment ring to the desired position.
3. Lower the vertical post onto the ring.

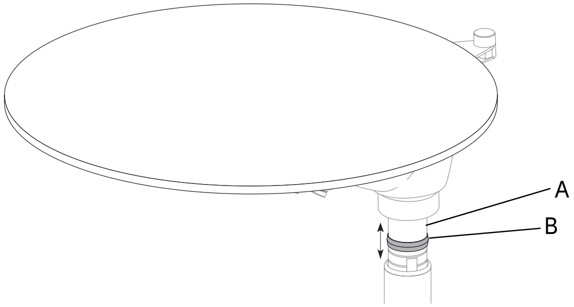
NOTE The height adjustment range for the worksurface is 2-1/2" (63.5 mm) and for the doctor's instrumentation arm is 3" (76.2 mm).

Figure 159 **Worksurface and Doctor's Instruments Height Adjustment - 545**



(A) Vertical Post of the Worksurface; (B) Height Adjustment Ring for Worksurface

Figure 160 **Worksurface Height Adjustment - 545**



(A) Vertical Post of the Worksurface; (B) Height Adjustment Ring for Worksurface

Instrumentation Arm Positioning

The A-dec 500 instrumentation holders offer horizontal and vertical positioning. Each holder rotates for independent angle adjustment (see Figure 161).

Assistant's Arm

■ To Adjust the Assistant's Arm Tension

1. Tighten or loosen the screw located under the assistant's arm.
2. Check your adjustment (see Figure 162).

■ Position Individual Holders

You can customize the position of each holder on the holder assembly arm:

1. Pull holder slightly away from the adjacent holder.
2. Twist to the desired position and release (see Figure 163).

Figure 161 **Instrumentation Arm Positioning**

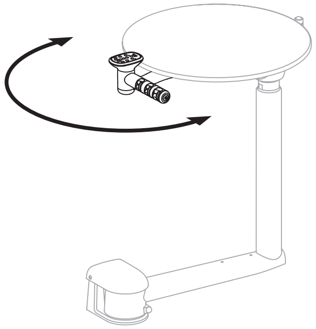


Figure 162 **Assistant's Arm Adjustment**

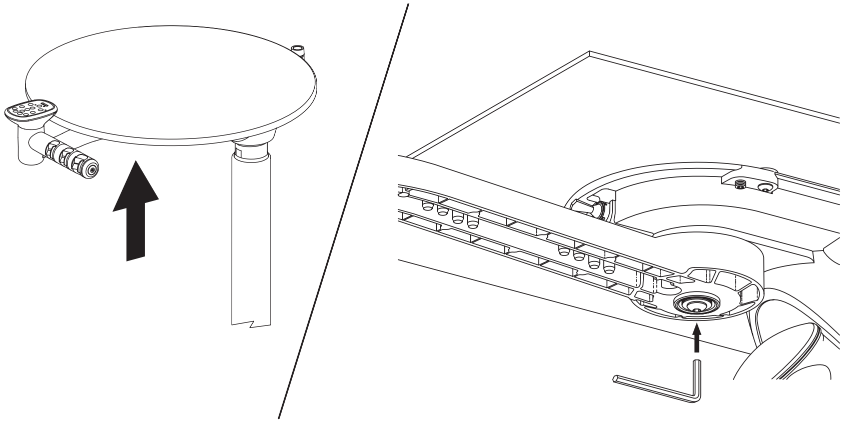
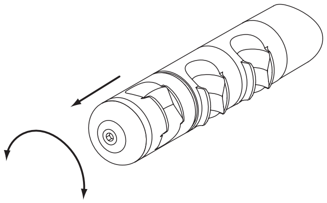


Figure 163 **Instrument Holder Positioning**



Holder positions rotate independently

5

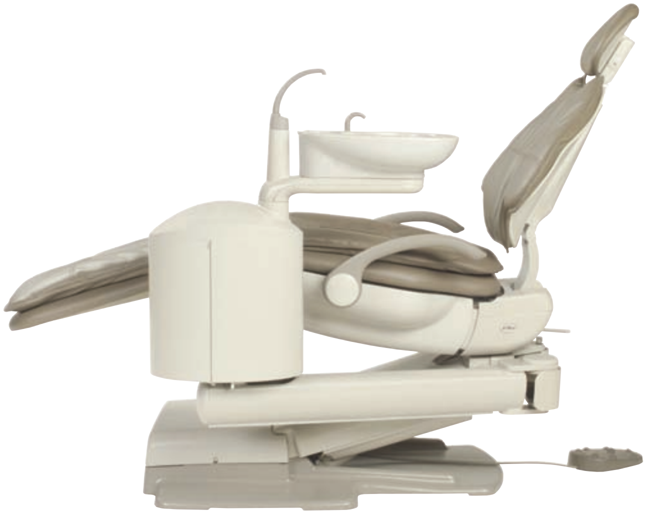
CUSPIDOR AND SUPPORT CENTER

The support center, cuspidor and amalgam separator housing install on the lower support arm. The support side-mounted water bottle and the cuspidor circuit board are inside the support center. This section provides information related to servicing, maintenance and adjustments for the cuspidor.

CONTENTS

- **Product Overview, page 248**
- **Flow Diagram, page 250**
- **Service/Usage Information, page 252**
- **Adjustments/Maintenance, page 254**
- **Illustrated Parts Breakdown, page 257**
- **Amalgam Separator Housing, page 265**

Figure 164 **561 Cuspidor and Support Center**



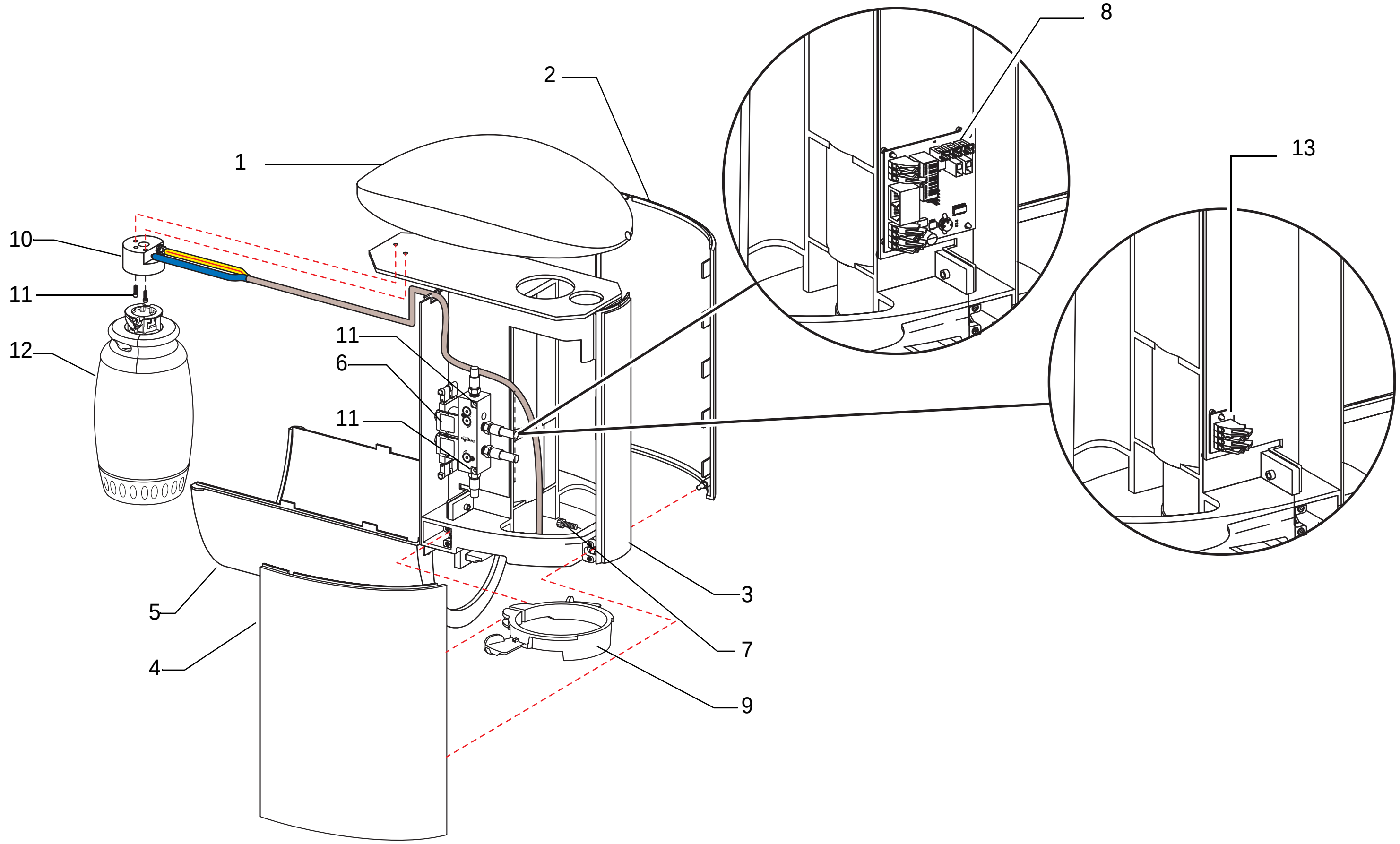
CUSPIDOR

PRODUCT OVERVIEW

The support center houses the cuspidor fill/rinse manifold, cuspidor circuit board, and support side water bottle. The cuspidor is preset with an automatic timed cup fill and bowl rinse. You can program both the cup fill and the bowl rinse functions.

Item	Part Number	Description
1	77.0034.00	Cover, top
2	77.0036.01	Cover, right
3	77.0037.00	Cover, nose
4	77.0035.01	Cover, left
5	14.0472.00	Cover, housing, water bottle
6	38.1803.00	Cuspidor manifold
7	001.089.00	Screw
8	90.1079.00	Cuspidor circuit board kit
9	77.0232.00	Rotational stop
10	14.0475.00	Bottle receptacle assembly
11	002.112.00	Screw
12	14.0468.00	Self-contained water bottle assembly
13	43.0045.00	PCA, terminal strip, 4 position (without cuspidor only)

Figure 165 **Identification of the Support Center Components**

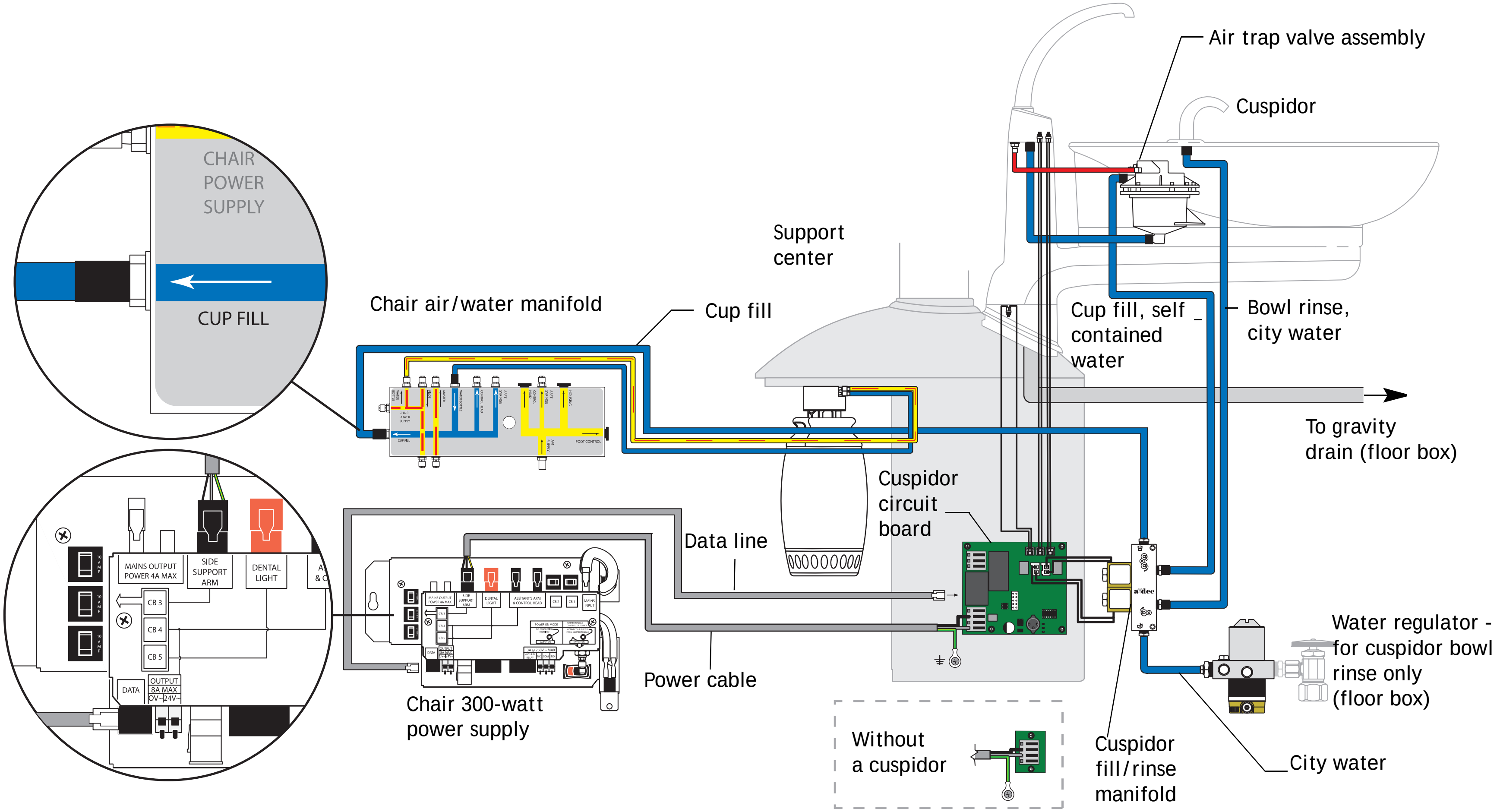

8
2
13
1
10
11
12
11
6
11
5
4
3
7
9

FLOW DIAGRAM

Cuspidor and Support Center

This flow diagram describes the plumbing and electrical connections of the cuspidor and support center.

Figure 166 **Cuspidor and Support Center Flow Diagram**


CHAIR
POWER
SUPPLY
CUP FILL
MAINS OUTPUT
POWER 4A MAX
SIDE
SUPPORT
ARM
DENTAL
LIGHT
CB 3
CB 4
CB 5
DATA
OUTPUT
8A MAX
0V~ 24V~
Chair air/water manifold
Cup fill
Support
center
Air trap valve assembly
Cuspidor
Cup fill, self
contained
water
Bowl rinse,
city water
To gravity
drain (floor box)
Cuspidor
circuit
board
Data line
Power cable
Chair 300-watt
power supply
Without
a cuspidor
Cuspidor
fill/rinse
manifold
Water regulator -
for cuspidor bowl
rinse only
(floor box)
City water

SERVICE/USAGE INFORMATION

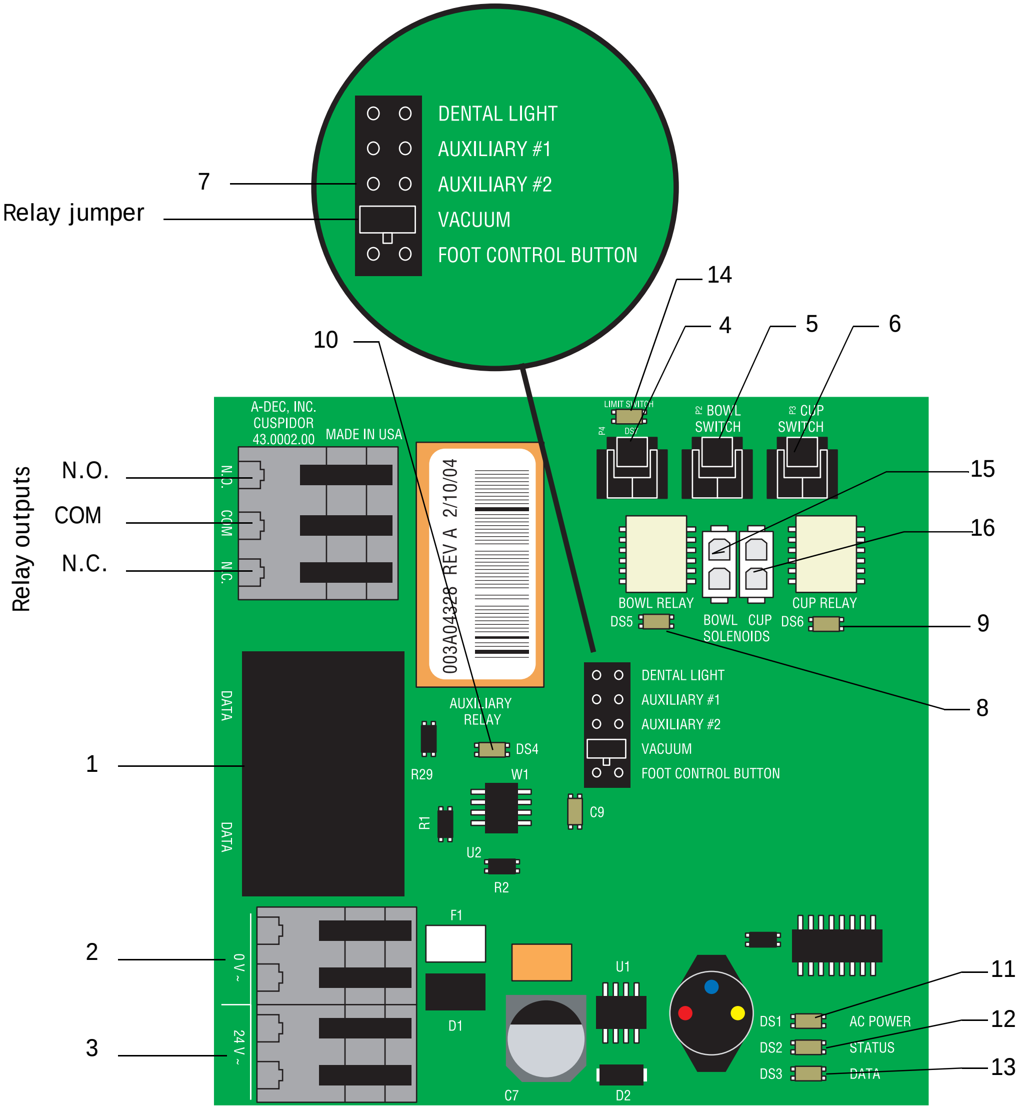
Cuspidor Circuit Board Components

Part No: 90.1079.00

The cuspidor circuit board controls the bowl rinse and cup fill solenoids. The LEDs on the circuit board indicate the status of the cuspidor and can be used for troubleshooting. The circuit board is also equipped with a built-in A-dec relay. The built-in relay functions exactly like the A-dec relay module.

Item	Description
1	P5 - DCS terminals
2	J1 - Ø VAC terminal strip
3	J1 - 24VAC terminal strip
4	P4 - Cuspidor limit switch connector
5	P2 - Bowl rinse switch connector
6	P3 - Cup fill switch connector
7	P1 A-dec relay selection header
8	DS5 - Bowl rinse relay LED
9	DS6 - Cup fill relay LED
10	DS4 - Auxiliary relay LED
11	DS1 - AC power LED
12	DS2 - Status LED
13	DS3 - Data LED
14	DS7 - Limit switch LED
15	P6 - Bowl rinse solenoid connector
16	P7 - Cup fill solenoid connector

Figure 167 **Cuspidor Circuit Board Components**


DENTAL LIGHT
AUXILIARY #1
AUXILIARY #2
VACUUM
FOOT CONTROL BUTTON
7
Relay jumper
14
4
5
6
10
A-DEC, INC.
CUSPIDOR
43.0002.00
MADE IN USA
LIMIT SWITCH
P4
DS7
P2 BOWL SWITCH
P3 CUP SWITCH
Relay outputs
N.O.
COM
N.C.
003A04328 REV A 2/10/04
15
16
BOWL RELAY
CUP RELAY
DS5
BOWL CUP SOLENOIDS
DS6
9
8
DATA
AUXILIARY RELAY
DS4
R29
W1
C9
R1
U2
R2
1
2
3
0 V ~
24 V ~
F1
D1
C7
U1
D2
DS1
DS2
DS3
AC POWER
STATUS
DATA
11
12
13

ADJUSTMENTS/MAINTENANCE

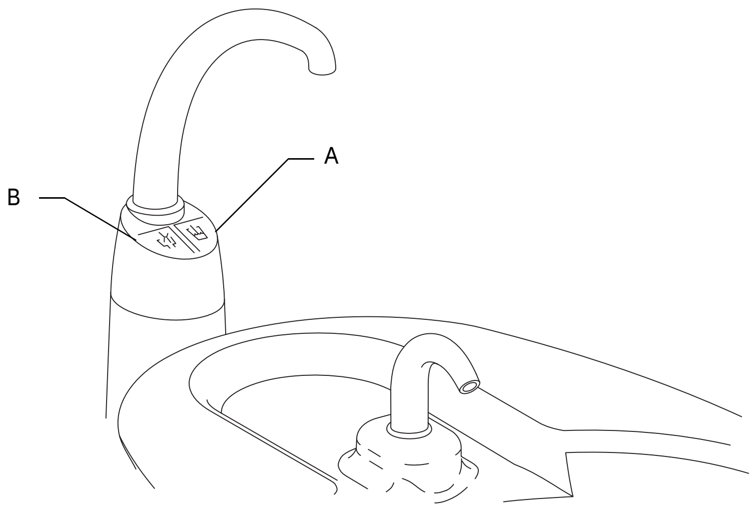
Cup Fill Functions

The cup fill function allows water to flow from the cuspidor cup fill spout into a cup.

- A quick press of the cup fill button activates a timed operation.
- A long press activates a manual operation.

NOTE The cup fill will only run a maximum of two minutes in the manual operation mode.

Figure 168 Cuspidor Buttons for Cup Fill and Bowl Rinse



(A) Cup Fill; (B) Bowl Rinse

Bowl Rinse Functions

The bowl rinse function provides rinse water for the cuspidor bowl.

- A quick press of the bowl rinse button activates a timed operation.
- A long press activates the manual operation.
- Two presses in less than two seconds, activates the continuous operation. Press the bowl rinse button once to stop the continuous operation.

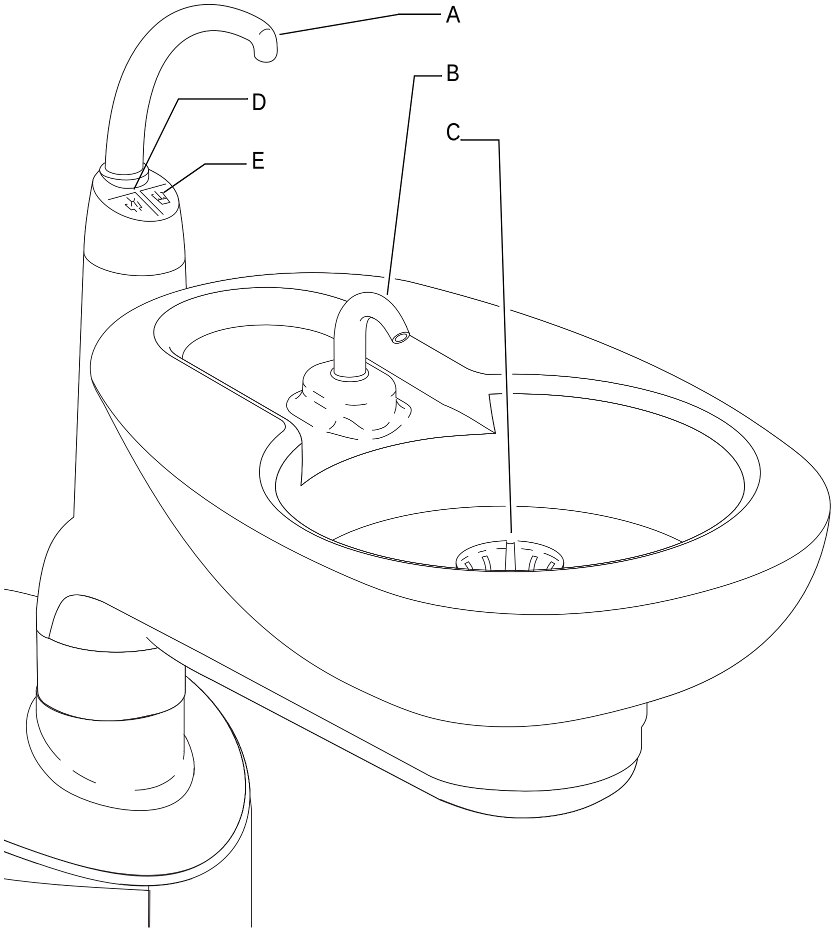
NOTE There is no maximum time limit for this function.

Cup Fill and Bowl Rinse Timing

Cup fill and bowl rinse functions can be reprogrammed using a touchpad or the footswitch program button and the appropriate button on the cuspidor. The table describes how to program the cup fill and bowl rinse functions of the cuspidor.

Step	Action
1	Press the **Program** button (one beep).
2	Press and hold **Cup Fill** or **Bowl Rinse** button for desired time.
3	Release button (three beeps).

Figure 169 **Cuspidor Programming Features**



(A) Cup Fill Spout; (B) Bowl Rinse Spout; (C) Bowl Screen; (D) Bowl Rinse Button; (E) Cup Fill Button

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the cuspidor.

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

CUSPIDOR IPB CONTENTS

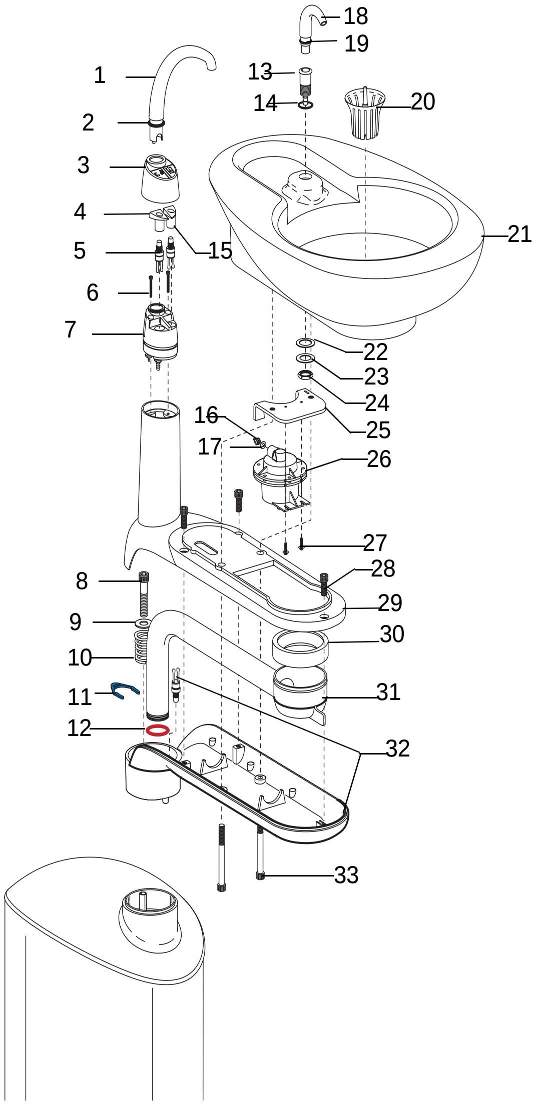
- **Cuspidor Upper Assembly , page 259**
- **Cuspidor Lower Assembly, page 262**
- **Cuspidor Fill/Rinse Manifold, page 264**
- **Cuspidor Circuit Board Components, page 252**
- **Cup Fill Functions, page 254**
- **Bowl Rinse Functions, page 254**

Cuspidor Upper Assembly

Item	**Part Number**	**Description**
1	77.0043.01	Spout, cup fill, cuspidor, with O-ring
2	030.012.02	O-ring, AS568-012, package of 10
3	77.0044.00	Gasket, spout, cup, cuspidor, Surf 6
4	77.0099.00	Button, cuspidor, fill/rinse, left
5	43.0010.00	Switch assembly, normally open, momentary, 20”, 2-MTE
6	005.088.00	Screw, socket head, 6-32 x 1 1/4
7	77.0097.01	Support, cuspidor spout with barbs
8	002.082.03	Screw, socket head stainless steel, 1/4-20 x 1-1/2
9	004.141.00	Washer, flat, stainless, FL,.261 ID
10	013.061.01	Spring, compression,.75 OD x 1.00 FL
11	022.090.00	Clip, retainer, connector, vacuum
12	035.053.01	O-ring, silicone, vacuum, 20mm x 2mm, package of 10
13	77.0105.00	Socket, bowl rinse spout, Surf 4
14	030.014.02	O-ring, AS568-014, package of 10
15	77.0100.00	Button, cuspidor, fill/rinse, right
16	023.811.00	Barb,.018 restrictor, 1/8 x 10-32
17	004.005.02	Washer, flat, nylon.187 ID package of 10
18	77.0042.01	Spout, bowl rinse, cuspidor, with O-ring
19	030.011.02	O-ring, AS568-011, package of 10
20	75.0035.01	Screen, cuspidor bowl, package of 5
21	77.0038.00	Bowl, cuspidor, ceramic
22	004.035.00	Washer, flat, nylatron,.511 ID
23	004.132.00	Washer, flat, stainless steel,.500 ID
24	006.009.00	Nut, hex, 15/32-32 x 9/16 x 3/32
25	77.0236.00	Bracket, hold down, cuspidor

Item	Part Number	Description
26	13.0403.00	Valve assembly, air trap, cuspidor
27	005.161.00	Screw, socket head, 6-32 x 5/8 with washer, stainless steel
28	001.088.00	Screw, socket head, 10-32 x 5/8 stainless steel
29	77.0108.00	Top housing, cuspidor, back mount, Surf
30	12.0991.00	Drain seal, cuspidor
31	77.0040.00	Tube, drain, cuspidor, back mount
32	77.0620.00†	Bottom housing, cuspidor with switch, Surf
33	005.106.00	Screw, 10-32 x 2 1/2, socket head

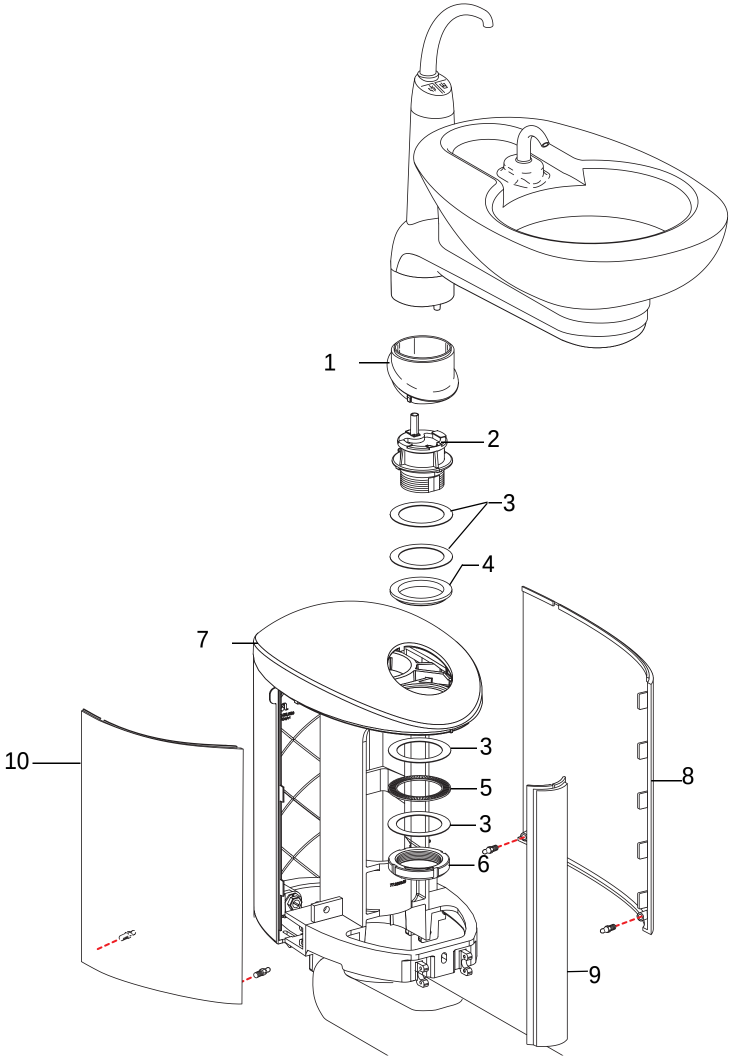
Figure 170 **Cuspidor Upper Assembly**


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

Cuspidor Lower Assembly

Item	Part Number	Description
1	77.0098.00	Trim ring, cuspidor
2	77.0330.00	Hub, pivot, cuspidor
3	016.108.00	Bearing, thrust, race 2.0 ID. plain
4	12.0911.00	Bushing, cuspidor, pivot
5	016.044.00	Bearing, thrust, needle 2.0 ID
6	61.0954.00	Nut, lock, 1-31/32-18, plated
7	77.0034.00	Cover, top, cuspidor, housing, Surf
8	77.0036.00	Cover, right, cuspidor housing, Surf
9	77.0037.00	Cover, nose, cuspidor housing, Surf
10	77.0035.00	Cover, left, cuspidor housing, Surf

Cuspidor Lower Assembly


1
2
3
4
7
3
5
3
6
10
8
9

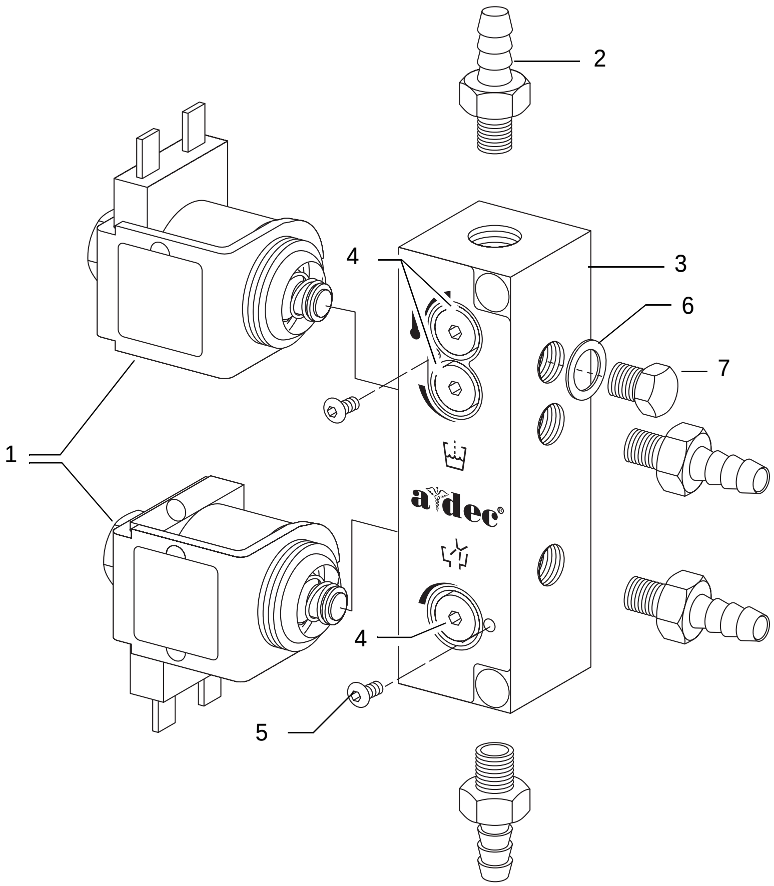
Cuspidor Fill/Rinse Manifold

Part No: 38.1803.00

The cuspidor fill/rinse manifold assembly mounts inside the support center.

Item	Part Number	Description
1	041.660.00	Solenoid, 24 VAC
2	023.804.00	Barb, 5/16”
3	38.1794.00†	Block, fill/rinse/mix
4	75.0222.00	Stem, flow adjustment
5	002.105.00	Screw, button head socket
6	004.005.02	Washer, package 10
7	021.016.04	Plug, hex head, package 10

Figure 171 **Identification of the Fill/Rinse Components**



AMALGAM SEPARATOR HOUSING

COMPONENTS

The A-dec 500 amalgam separator housing attaches to the support center. Use the support center nose cover on the amalgam separator housing after installation.

Several brands of amalgam separators mount inside the A-dec 500 amalgam separator housing. Follow the manufacturer's instructions for the specific separator being installed.

Item	Part Number	Description
1	77.0011.00	Cover, top
2	77.0009.00	Cover, side (both sides)
3	77.0037.00	Cover, nose
4	77.092.00	Cover, pod support
5	77.0221.00	Pod support

Figure 172 Identification of the Amalgam Separator Housing Components

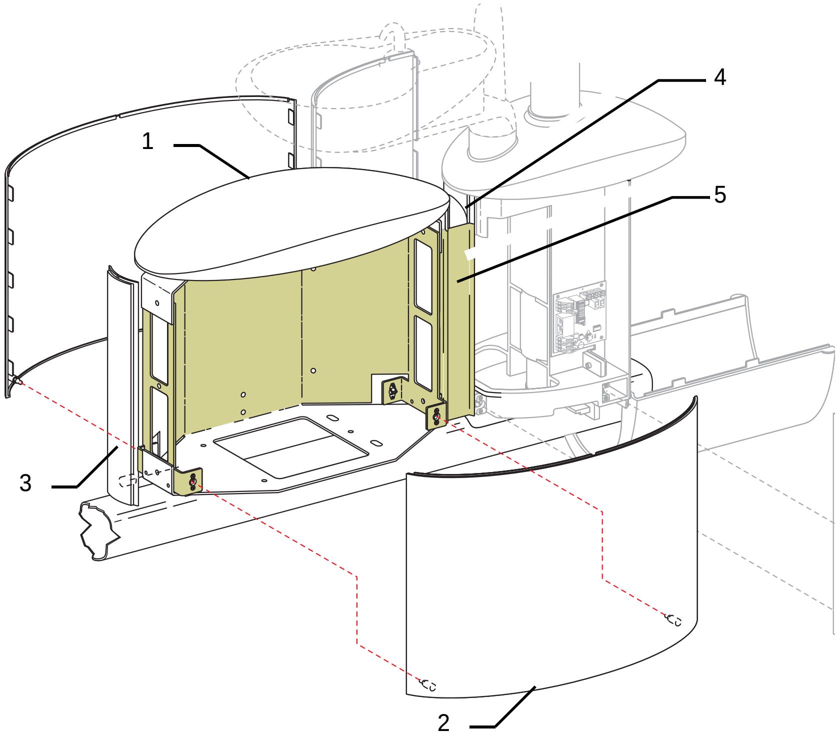
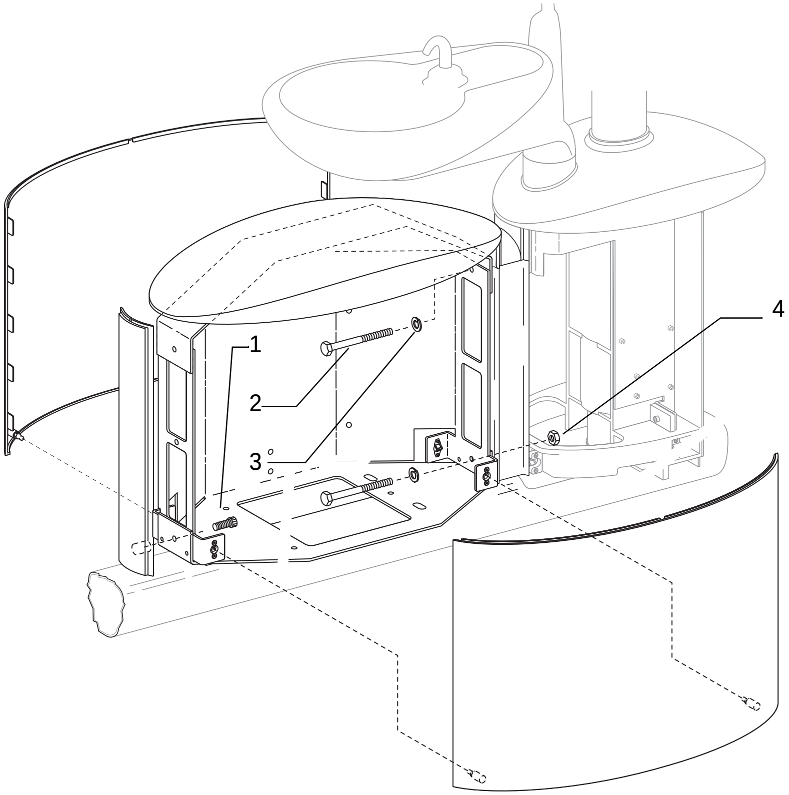


Figure 173 Identification of the Amalgam Separator Housing Mounting Hardware



Item	**Part Number**	**Description**
1	001.089.00	Socket head screw 1/4-20 x 5/8
2	005.166.00	Screw, hex head, 1/4-20 x 3 1/2” stainless steel
3	004.016.00	Washer, split lock, .250 ID
4	006.052.00	Lock nut

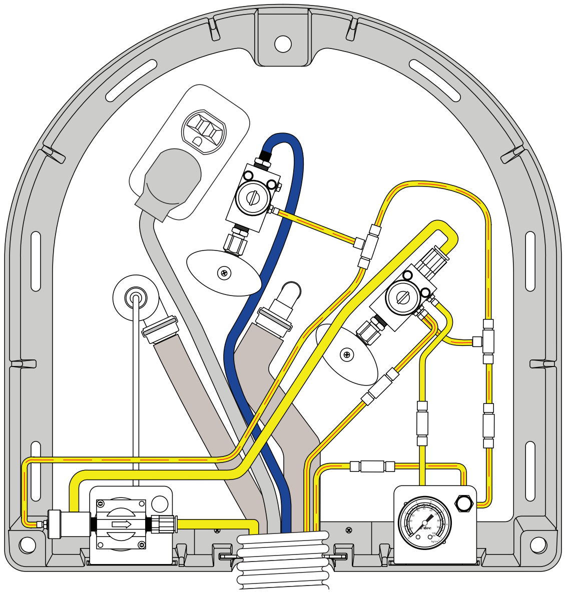
6

FLOOR BOX

This section provides information related to servicing, maintenance and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

SYSTEMS CONTENTS

- **Product Overview, page 270**
- **Service/Maintenance, page 271**
- **Illustrated Parts Breakdown, page 273**



PRODUCT OVERVIEW

The floor box contains the air and water manual shutoff valves, filters, air and water regulators, pressure pre-regulator, vacuum and gravity drains.

Air and Water Manual Shutoff Valves

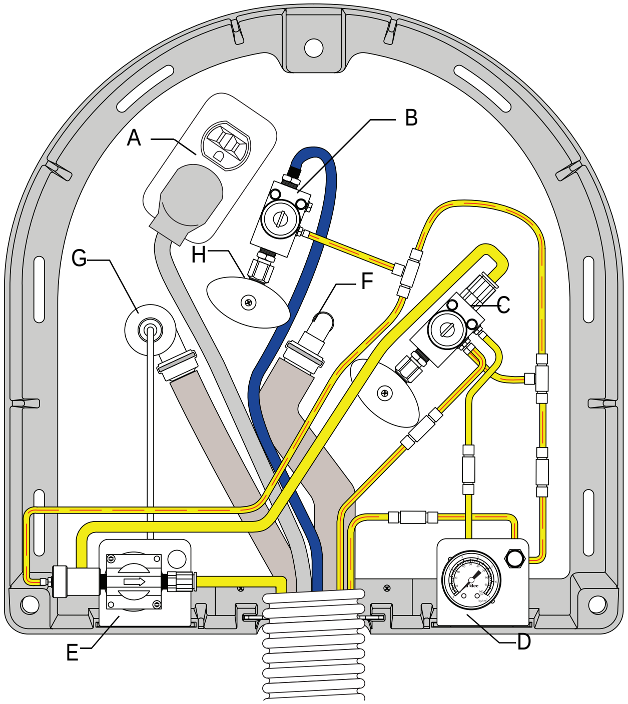
Shutoff valves supply the air and water to the unit. To prevent leaks, these valves should remain fully open (turned counterclockwise) except while the unit is being serviced (see Figure 174).

Gauge and Pre-Regulator

The pre-regulator controls the air and water pressure in the unit. The gauge displays the unit air pressure (see Figure 174).

Item	Part Number
A	Duplex (Customer provided)
B	24.0474.00
C/D	24.0475.00
E	41.1477.00
F	023.816.00
	035.053.00
	022.090.00
	022.094.00
G	023.812.00
	035.053.00
	022.090.00
	022.092.00

Figure 174 **Identification of the Floor Box Utilities**



(A) Electrical Duplex Outlet; (B) Water Filter Regulator (cuspidor only); (C) Air Filter Regulator; (D) Gauge and Pre-regulator Assembly; (E) Moisture Separator (optional); (F) Vacuum Drain; (G) Cuspidor Drain; (H) Manual Shutoff Valves

SERVICE/MAINTENANCE

Filter Element

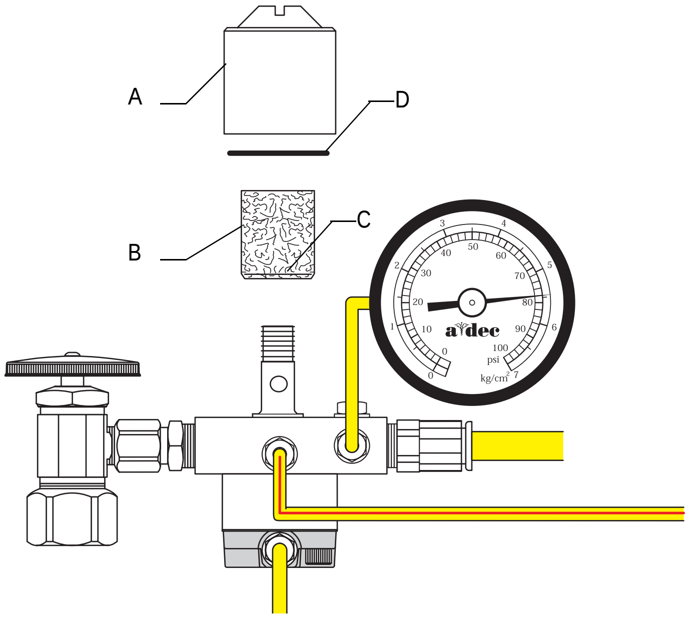
A clogged filter reduces the amount of air and water pressure available to the unit. To replace:

1. Move the master On/Off toggle to OFF.
2. Close the manual shutoff valves.
3. Bleed the system of air and water pressure by operating the syringe buttons until air and water no longer flow.
4. Remove the filter housing from the air and/or water regulator assembly with a flat blade screwdriver.
5. Replace the filter if it is visibly clogged or discolored.
6. Install the new filter with the beveled edge toward the manifold.

CAUTION Be sure to install the new filter with the beveled side toward the manifold. The unit may not work properly if installed incorrectly.

NOTE Turn the pre-regulator knob clockwise to increase air or water pressure. Turn the pre-regulator know counterclockwise to decrease air or water pressure. Read the pressure gauge while adjusting. Water pressure will increase/decrease by half gauge indication.

Figure 175 Replacing the Filter



(A) Filter Housing; (B) New Filter; (C) Beveled Edge; (D) O-ring

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the floor box.

Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

FLOOR BOX IPB CONTENTS

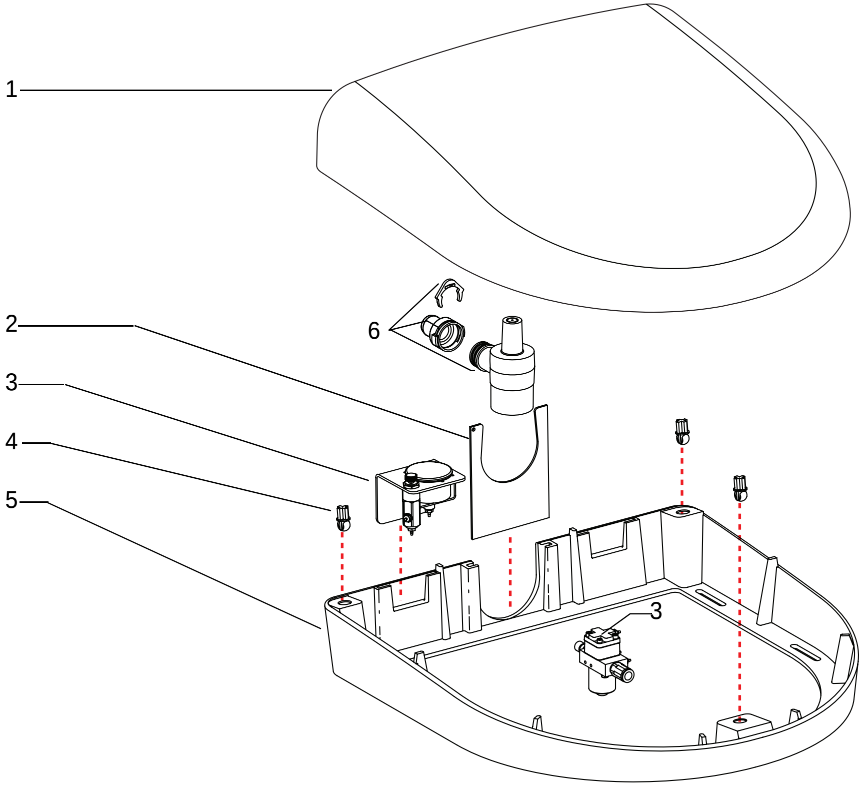
- **Floor Box, page 274**
- **Air and Water Filter Regulators, page 276**
- **Air and Water Filter Regulators Body Assembly, page 277**
- **Moisture Separator, page 278**

Floor Box

Part No: **41.1478.00 Utilities Module, 3' Umbilical**
Part No: **41.1478.01 Utilities Module, 3' Umbilical, No Sheath**
Part No: **41.1506.00 Floorbox Assembly, A-dec 511 Without Utilities**

Item	Part Number	Description
1	41.1464.01	Cover, floor box
2	41.1476.00	Umbilical clip
3	24.0475.00	Air filter regulator with pre-regulator
4	025.088.00	Ball snap, male
5	41.1467.00	Base, floor box
	41.1506.00	Floor box assembly, without utilities - includes items 1 & 5 only
6	023.812.00	Tee assembly

Figure 176 **Floor Box**

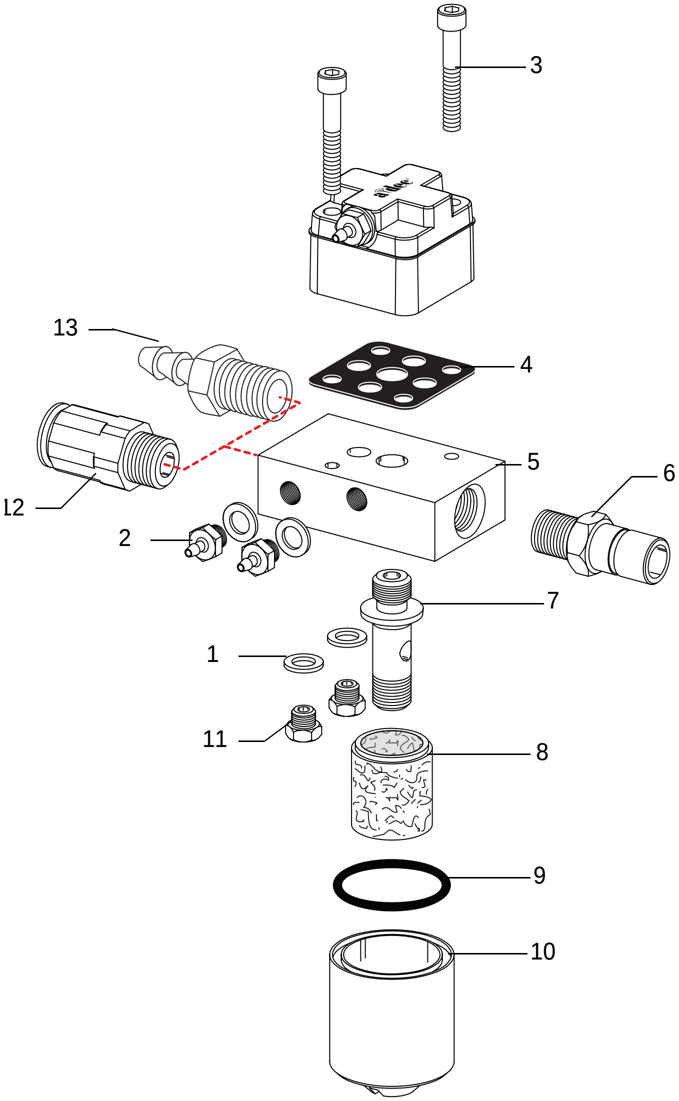


Air and Water Filter Regulators

The air and water filter regulators combine air-actuated shut-off valves with filter assemblies. When the master On/Off toggle is in the Off position, the filter regulators automatically shut off air and water to the system. This safety feature prevents water damage in the event of a water leak while the unit is unattended. The filters prevent solids from entering the unit.

Item	Part Number	Description
1	004.005.02	Washer, flat, nylon, .187 ID, package of 10
2	023.004.03	Barb, 1/8" x 10-32", package of 10
3	001.026.00	Screw, 6-32" x 7/8", socket head
4	24.0137.01	Gasket, 9-hole, package of 10
5	24.0162.00	Manifold, filter/regulator
6	021.042.00	Adapter, 1/8" MPT to 3/8"
7	24.0232.00	Stud, filter regulator/manifold
8	24.0234.01	Filter element, filter/regulator, package of 6
9	030.019.03	O-ring, package of 10
10	24.0229.00	Housing, filter
11	021.016.04	Plug, hex 10-32", package of 10
12	022.088.00	Fitting, push in, 5/16" x 1/8" (air regulator only)
13	023.804.00	Barb, 5/16" x 1/8" (water regulator only)
	24.0475.00	Air filter regulator assembly with pre-regulator
	24.0474.00	Water filter regulator assembly, black

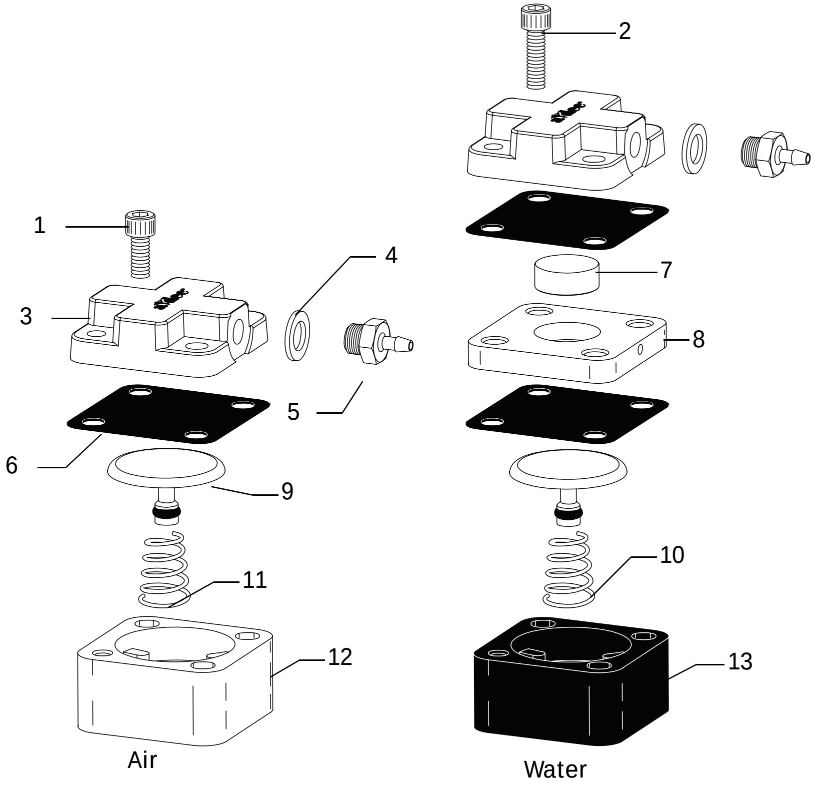
Figure 177 Air and Water Filter Regulator Components



Air and Water Filter Regulators Body Assembly

Item	Part Number	Description
1	001.024.00	Screw, socket head, 4-40" x 3/8" SST
2	001.021.00	Screw, socket head, 4-40" x 1/2" SST
3	24.0368.00	Valve cover
4	004.005.02	Washer, flat, nylon .187 ID, package of 10
5	023.004.03	Barb, 1/8" x 10-32, package of 10
6	22.0440.02	Diaphragm, package of 10
7	24.0142.00	Plunger
8	24.0140.00	Spacer, water regulator
9	24.0132.00	Piston with O-ring, Delrin
10	013.032.00	Spring, compression .260/.350 OD (water)
11	22.0460.00	Spring, conical (air)
12	24.0135.00	Body, regulator, white (air) .295/.255 OD
13	24.0355.00	Body, regulator, black (water)
	24.0366.00	Air filter regulator body assembly
	24.0367.00	Water filter regulator body assembly

Figure 178 Air and Water Filter Regulators Body Assembly Components



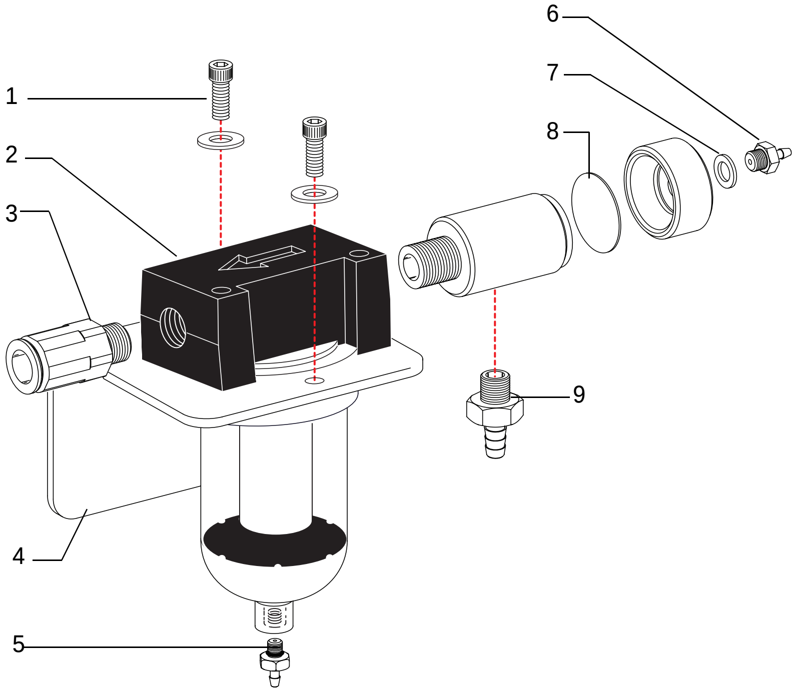
Moisture Separator

Part No: 41.1477.00

The moisture separator is used to separate moisture from the compressed air.

Item	Part Number	Description
1	001.033.00	Screw, socket head, 6-32" x 3/8"
2	41.1477.00	Moisture separator, auto
3	022.088.00*	Fitting, push in, 5/16" x 1/8"
4	24.0472.00	Bracket, gauge/moisture separator
5	023.066.00	Barb, 1/8" x .206-36
6	023.004.03	Barb, 1/8" x 10-32, package of 10
7	004.005.02	Washer, flat nylon, .187 ID, package of 10
8	41.1469.01	Diaphragm, .75" DX x .013" THK, package of 5
9	023.804.00	Barb, 5/16" x 1/8"

Figure 179 **Moisture Separator Components**



7

SUPPORT SIDE FEATURES

This section of the service guide contains service information for the A-dec 500 Support Side System. This section provides information related to servicing, maintenance, and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

SYSTEMS CONTENTS

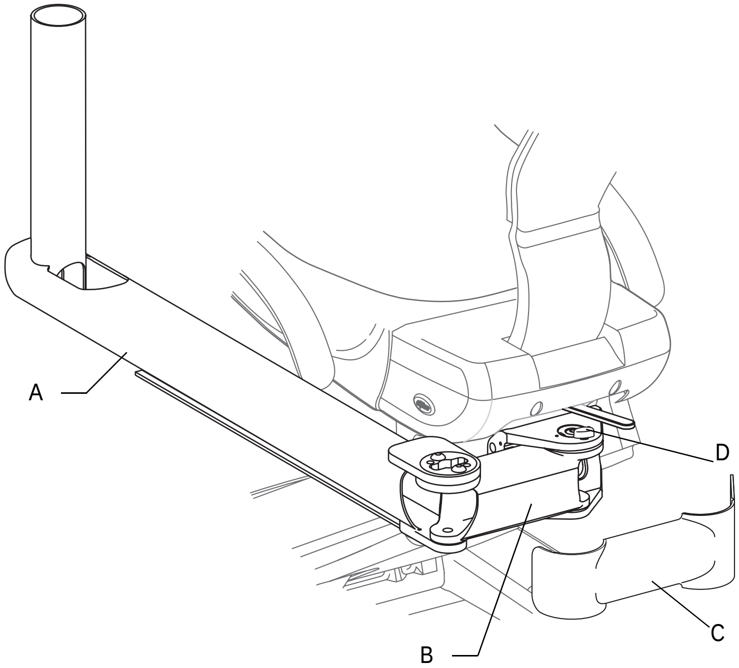
- **Product Overview, page 280**
- **Limit Switch Flow Diagram, page 282**
- **Adjustments/Maintenance, page 283**
- **Illustrated Parts Breakdown, page 287**

PRODUCT OVERVIEW

Components

The A-dec 500 support side system includes the support link and the lower support arm. The support link is the hub for all modules that mount off the back of the chair. The A-dec 561 cuspidor, monitor mount, A-dec 571 dental light and the amalgam separator housing require both a support link and a lower support arm. The 551 assistant's instrumentation requires only a support link.

Figure 180 Identifying the Support Link and Lower Support Arm



(A) Lower Support Arm; (B) Support Link; (C) Support Link Cover; (D) Locking Knob

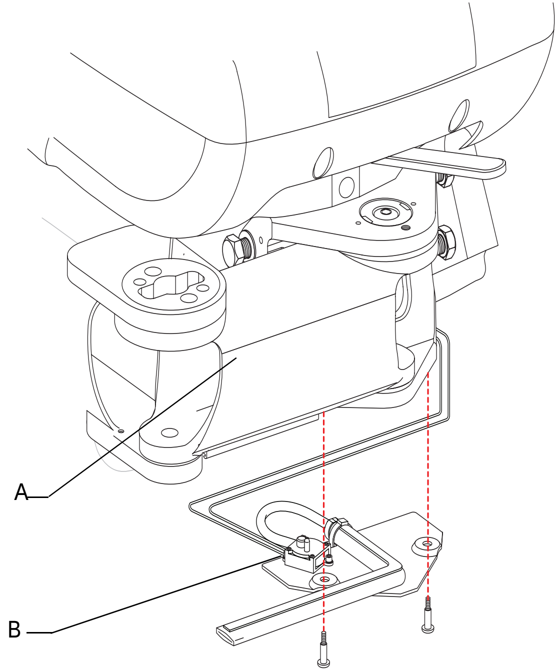
Limit Switch Operation

When pressed, the support side limit switch stops chair movement immediately. Be sure to power off the chair and disconnect it from its power source before replacing the limit switch.

Bump-Up Feature

The chair moves up approximately 1" if the chair is moving down when the switch is activated.

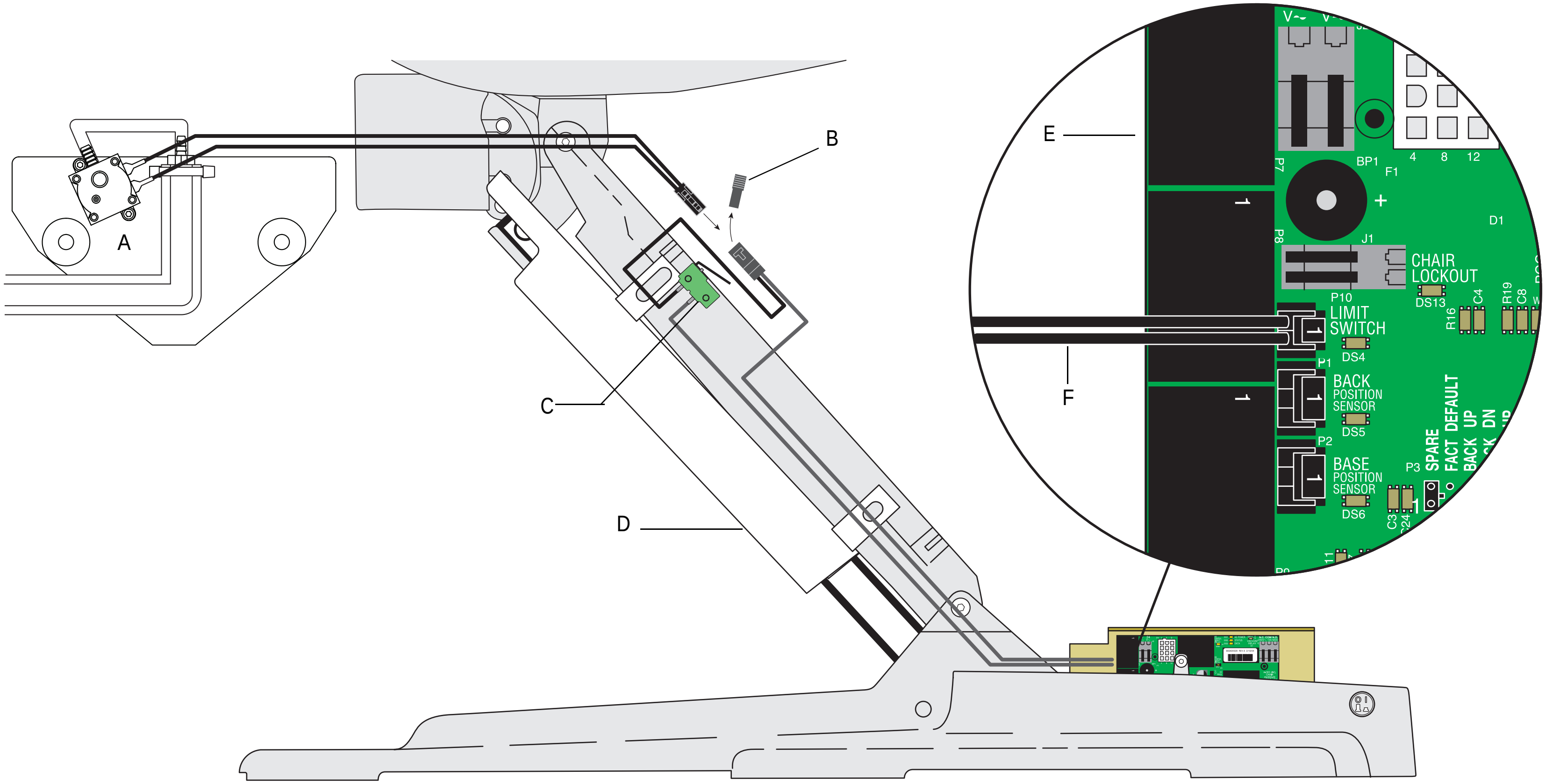
Figure 181 Remove the Limit Switch Assembly



(A) Support Link; (B) Limit Switch Assembly

FLOW DIAGRAM

Support Side Limit Switch Electrical Diagram


A
B
C
D
E
F
P7
BP1
F1
4
8
12
D1
P8
J1
CHAIR LOCKOUT
DS13
P10
LIMIT SWITCH
DS4
R16
C4
R19
C8
P1
BACK POSITION SENSOR
DS5
P2
BASE POSITION SENSOR
DS6
P3
SPARE
FACT DEFAULT
BACK UP
DN
C3
24
1

(A) Limit Switch Assembly; (B) Jumper; (C) Chair Limit Switch; (D) Chair Stop Plate; (E) Chair Circuit Board; (F) Chair Base Limit Switch Wires

ADJUSTMENTS/MAINTENANCE

Leveling

The support link mounts with four bolts to the back of the chair. Two dowel pins mount a leveling bar to the back of the chair. The leveling bar levels the support link and lower support arm. See Figure 185 on page 288 for location of leveling bar.

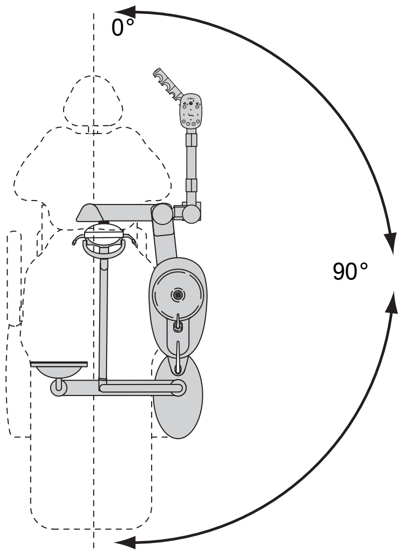
Proper Equipment Positioning for Leveling

To rotate the support side modules up to 90° right or left of the chair, loosen the locking knob on the support link. See Figure 185 on page 288 for location of locking knob.

Level the support link and lower support arm by adjusting the leveling bar in the support link assembly. Note where the support system will be positioned before leveling:

- If the support system is used both in a left and right positions, level the equipment with the modules positioned 90° to the back of the chair.
- If the support system is used in a stationary position, level the equipment with the modules in a normal operating position.

Figure 182 Positioning Support Side Modules for Leveling

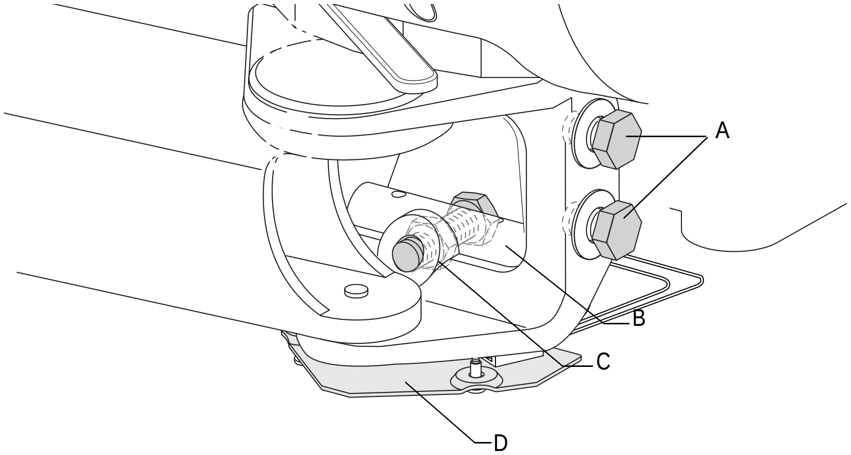


Support Link and Lower Support Arm Leveling

NOTE The limit switch assembly may have to be removed. Be sure to power off the chair and disconnect it from its power source before replacing the limit switch.

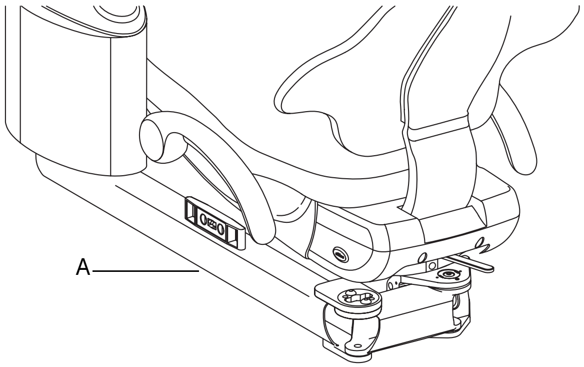
1. Loosen the two stand off screws securing the actuator plate. Allow the plate to hang free.
2. Loosen the four mounting bolts on the support link.
3. Loosen the locking nut.
4. Place a level parallel on the lower support arm, and adjust the leveling bar until the lower support arm is level.
5. Tighten the locking nut against the leveling bar (see Figure 183).
6. Tighten the four mounting bolts (see Figure 183) as tight as possible (65 ft.-lb. of torque).
7. Reattach the actuator plate using the two stand off screws.

Figure 183 **Tighten the Locking Nut Against the Leveling Bar**



(A) Mounting Bolts (each side); (B) Leveling Bar; (C) Locking Nut; (D) Actuator Plate

Figure 184 **Place Level Parallel on the Lower Support Arm**



(A) Lower Support Arm

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the support side.

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

SUPPORT SIDE FEATURES IPB CONTENTS

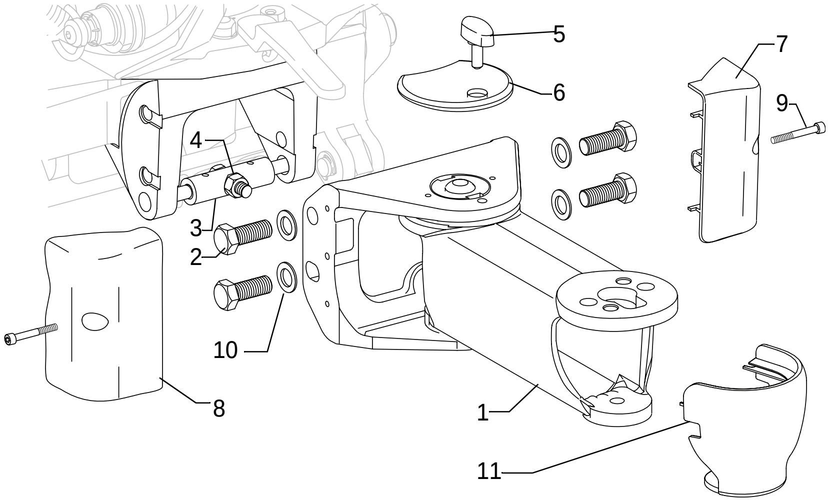
- **Support Link, page 288**
- **Limit Switch Components, page 289**
- **Lower Support Arm, page 290**

Support Link

Part No: 77.0278.00

Item	Part Number	Description
1	77.0278.00	Support link
2	001.094.00	Bolt, mounting 1/2-13 x 1 3/4"
3	77.0239.00	Leveling bar
4	006.148.00	Nut, locking, hex 1/2-13 x 3/4"
5	77.0373.00	Locking knob
6	77.0374.00	Small bearing cap cover
7	77.0376.00	Support link cover, right
8	77.0377.00	Support link cover, left
9	002.051.00	Screw, socket head, 10-32 x 1-1/2
10	004.240.00	Washer, 1/2"
11	77.0022.00	Cover, umbilical (not needed if there is a lower support arm attached - for assistant's only)

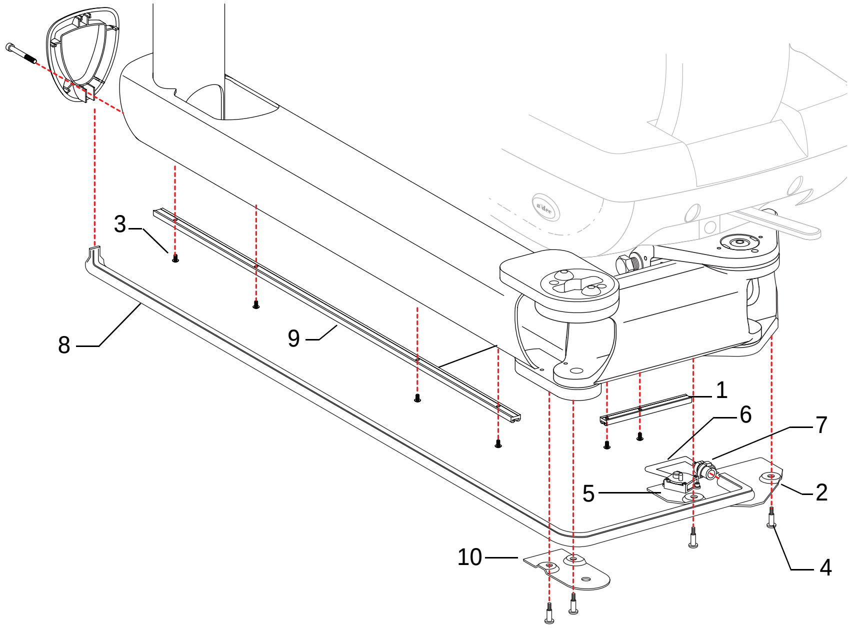
Figure 185 Support Link Components



Limit Switch Components

Item	Part Number	Description
1	77.0354.00	Bracket, limit switch, link arm (short)
2	77.0357.00	Actuator plate
3	002.140.00	Screws, patch button head, 6-32
4	77.0361.00	Stand-off screw
5	43.0087.00	Limit switch kit includes (2) 001.219.00 socket head screws, and 023.123.00† limit switch actuator barb
6	024.141.00	Tubing, 1/4" OD, D-Surf, 4"
7	025.002.01	Cable tie, package of 10
8	77.0360.00	Limit switch tubing (long) - 41.50” (shown)
	77.0359.00	Limit switch tubing (short) - 12.25” (not shown) For assistant’s instrumentation only
9	77.0355.00	Bracket, limit switch. support arm (long)
10	77.0358.00	Plate, actuator link

Figure 186 Support Side Limit Switch Components

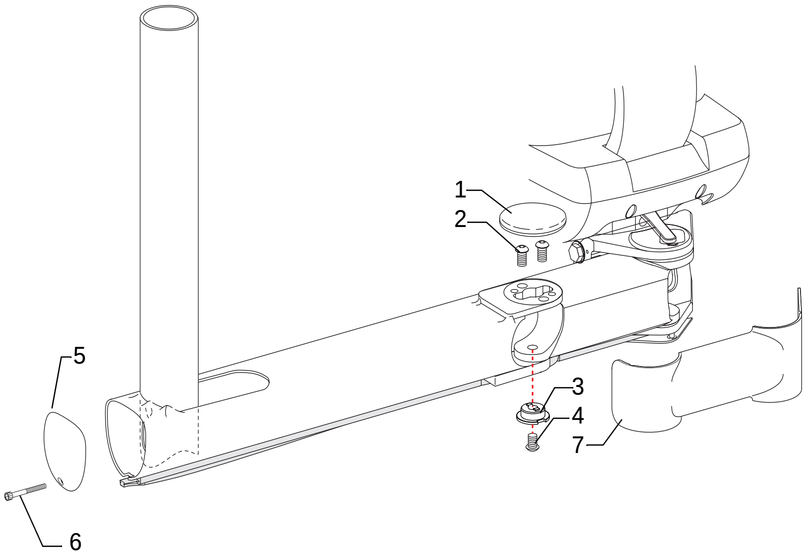


Lower Support Arm

Part No: 77.0286.00

Item	Part Number	Description
1	77.0211.00	Bearing cap, large
2	002.142.00	Screw, button head, socket 1/2-13 x 1"
3	77.0029.00	Bearing cap, small
4	005.160.00	Screw, button head, socket 1/2-13 x 3/4
5	77.0096.00	Cover, lower support arm end
6	002.051.00	Screw, 10-32 x 1 1/2"
7	90.1096.00	Cover, link arm

Figure 187 **Lower Support Arm Components**



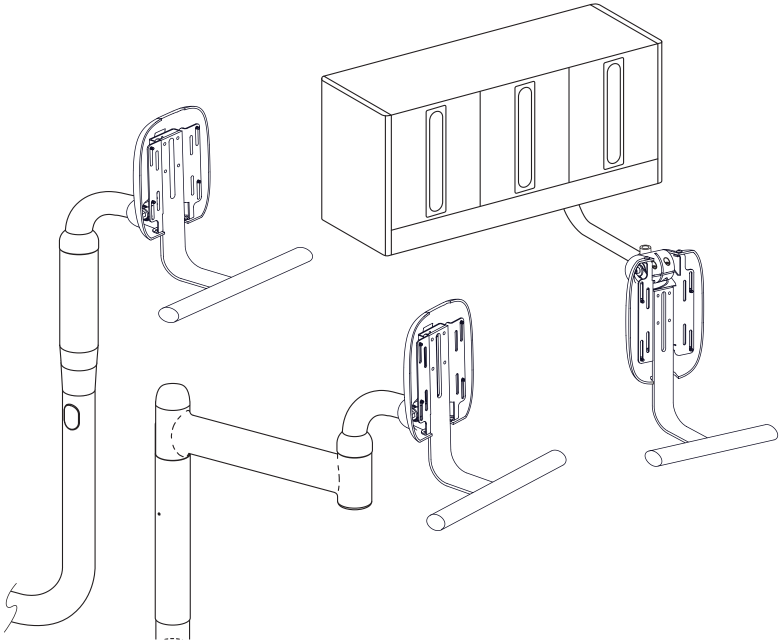
MONITOR MOUNTS

This section provides information related to service, maintenance, and adjustments of A-dec monitor mounts. Detail on how to service the A-dec 531, 561 and Track monitor mounts is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

SYSTEMS CONTENTS

- **Product Overview, page 292**
- **Adjustments, page 300**
- **Illustrated Parts Breakdown, page 303**

Figure 188 **A-dec Monitor Mounts**



PRODUCT OVERVIEW

Monitor Mount Specifications

- **Digital Monitor Requirements**
  - – Medical-grade monitor
  - – 15" diagonal active display
  - – 1024 x 768 resolution
  - – Digital inputs
  - – VESA mounting-compliant
  - – SVGA

- **Analog Monitor Requirements**
  - – Color palette adjustments
  - – 13" HDTV flat panel for analog integration
  - – NTSC or PAL format
  - – Video inputs
  - – Composite video display capability
  - – RCA connection port

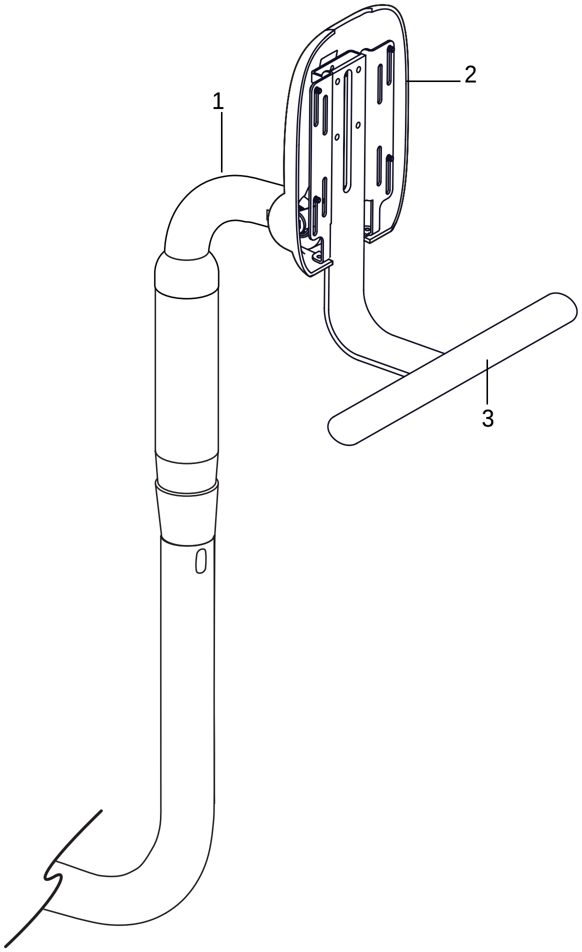
Components

Front Mount Monitor Mount (531)

The 531 front monitor mount uses the delivery mounting location and positions the flat-screen monitor on either side of the chair. It offers an exceptional range of motion to better position the monitor.

Item	Description
1	Mount arm
2	Monitor cover
3	Handle/bracket assembly

Figure 189 **Front Mount Monitor (531)**

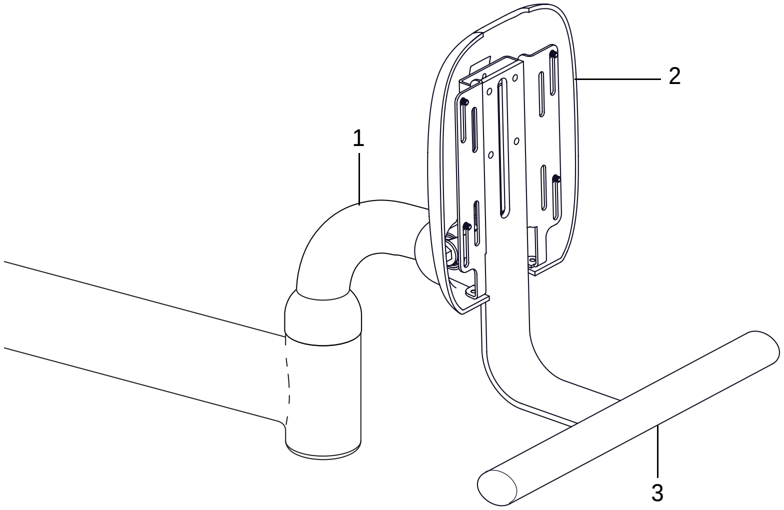


Support Side Monitor Mount (561)

The 561 support-side monitor mount delivers a flat-screen monitor from the side of the chair and brings it close to the patient. This option allows for enhanced patient entertainment and consultations during procedures.

Item	Description
1	Mount arm
2	Monitor cover
3	Handle/bracket assembly

Figure 190 Support Side Monitor Mount (561)

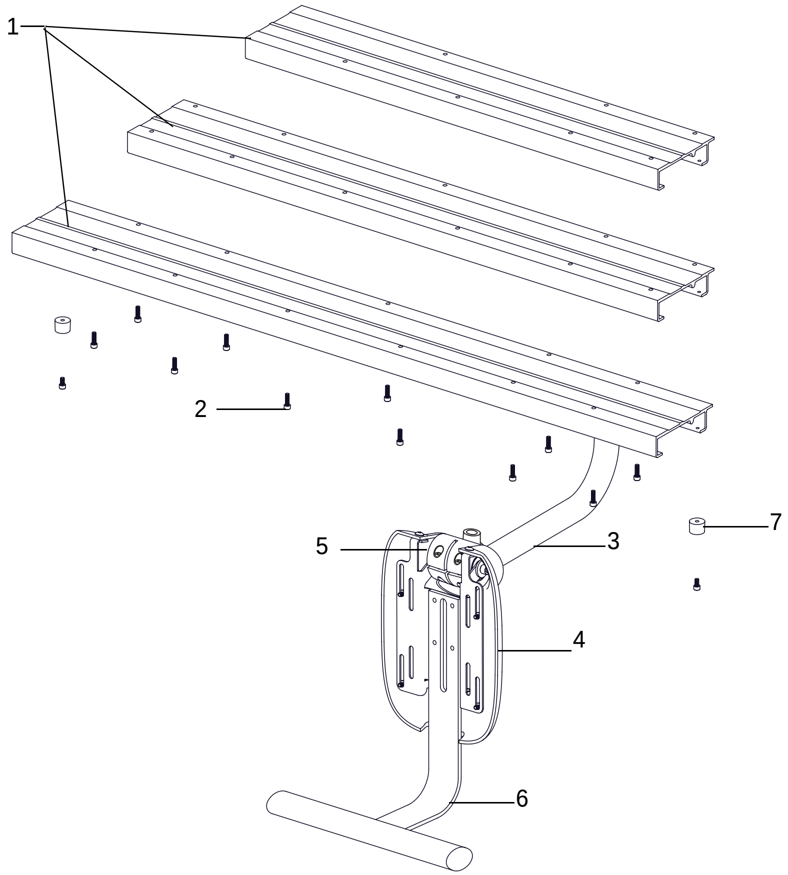


Monitor Track Mount (500 Track)

The monitor track mount attaches to the underside of the upper storage cabinet. The movement allows the monitor to glide easily in multiple positions.

Item	Description
1	Track (factory installed on 5562, 5662, 5731, 5580 and Slimline uppers)
2	Mounting screws (factory installed on 5562, 5662, 5731, 5580 and Slimline uppers)
3	Mount arm
4	Monitor cover
5	Clutch assembly
6	Handle/bracket assembly
7	Track bumper

Figure 191 Monitor Track Mount

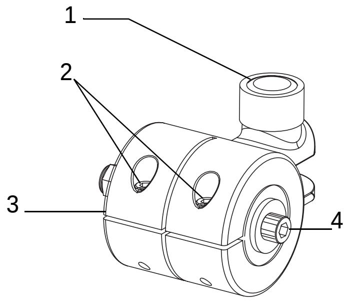


Clutch Assembly

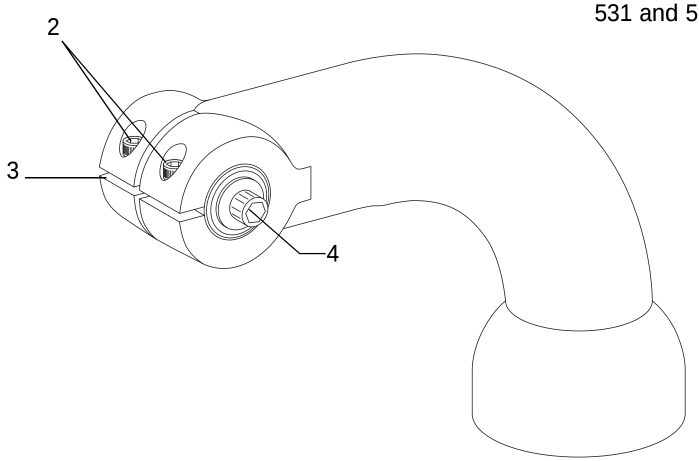
The clutch assembly provides tilt and drift movement to the monitor. Use the adjustment screws to adjust the tilt and drift.

Item	Description
1	Bumper
2	Adjustment screws
3	Hub
4	Clutch assembly

Figure 192 **Clutch Assembly**



A-dec 500 Track

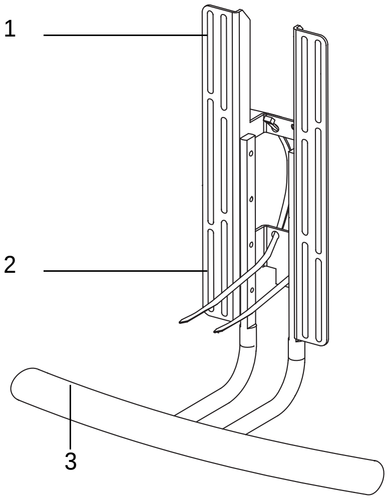


531 and 561

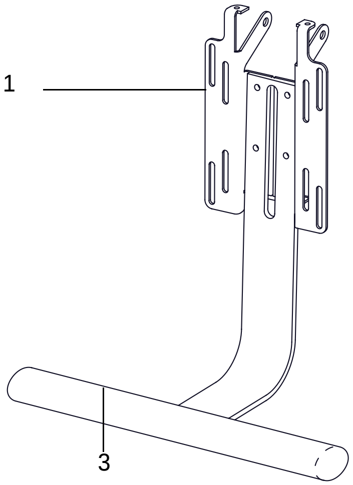
Handle/Bracket Assembly (531/561/A-dec 500 Track)

Item	Description
1	Mounting bracket
2	Cable ties
3	Handle assembly

Figure 193 **Handle/Bracket Assembly**



Before February 2007



After February 2007

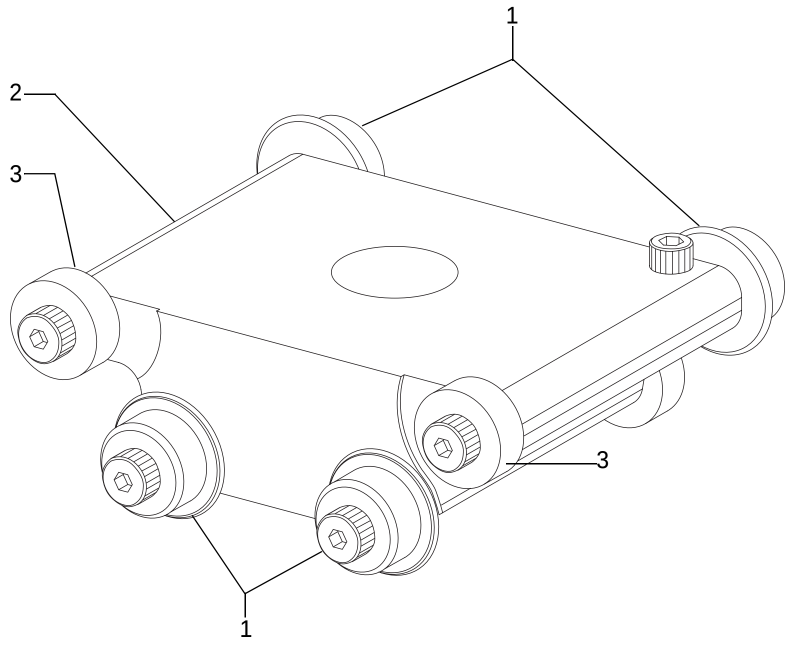
Trolley Assembly (A-dec 500 Track)

Before February 2007

The trolley assembly allows the monitor support arm to roll along the track.

Item	Description
1	Caster
2	Carrier
3	Ball bearing

Figure 194 **Trolley Assembly Before February 2007**



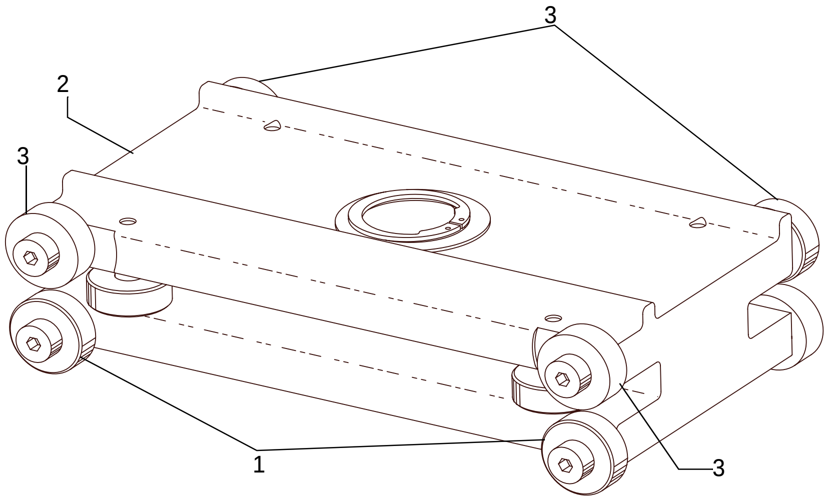
Trolley Assembly (A-dec 500 Track)

After February 2007

The trolley assembly allows the monitor support arm to roll along the track.

Item	Description
1	Caster
2	Carrier
3	Ball bearing

Figure 195 **Trolley Assembly After February 2007**



ADJUSTMENTS

Friction Adjustment

There are two main adjustments made to the monitor: tilt and drift friction (see Figure 196).

Tilt Friction

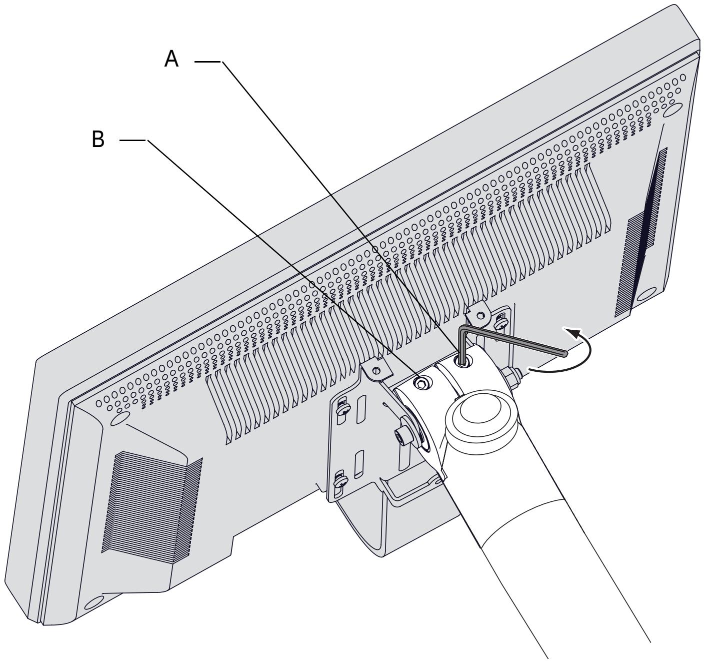
Adjust the tilt friction by tightening or loosening the tilt friction adjustment screw located on the top of the monitor mount. Tilt is the angling of the monitor backwards.

Drift Friction

Adjust the drift friction by tightening or loosening the drift friction adjustment screw located on the top of the monitor mount. Drift is the monitor falling forward.

NOTE For any adjustment to work properly, center bolt must be tightened.

Figure 196 **Monitor Adjustments**



(A) Tilt Friction Adjustment Screw; (B) Drift Friction Adjustment Screw

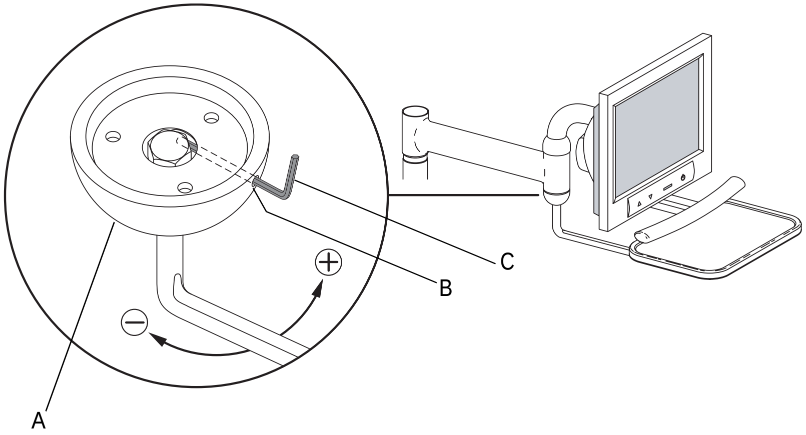
Tray Holder Tension Adjustment (Support Side Monitor Mount, 561)

The tension adjustment screw for the tray holder is located in the hub of the tray holder arm.

- **To adjust:**

1. Locate the small hole in the tray holder hub (see Figure 197).
2. Insert a 5/32" hex key through the hole.
3. Rotate the tray support arm to adjust the tension, (right to increase tension — left to decrease tension).

Figure 197 Monitor Tray Adjustment



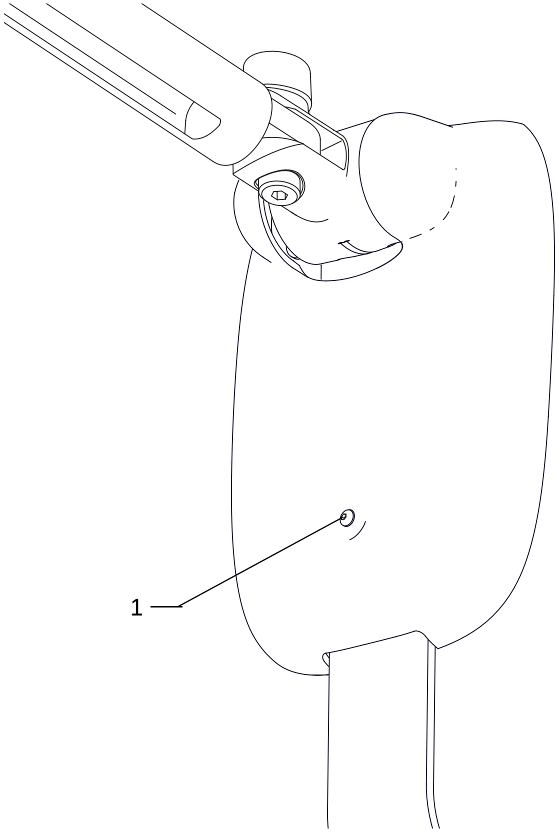
A) Tray Holder Hub; (B) Hole; (C) 5/32" Hex Key

Panning Friction Adjustment (500 Track Mount Monitor)

Tighten or loosen the panning friction adjustment screw on the monitor mount. Use a 3/16" hex key and tighten down until the monitor no longer freely rotates.

Item	Description
1	Panning friction screw

Figure 198 **Adjust Panning**



ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the monitor mounts.

Part Identification

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

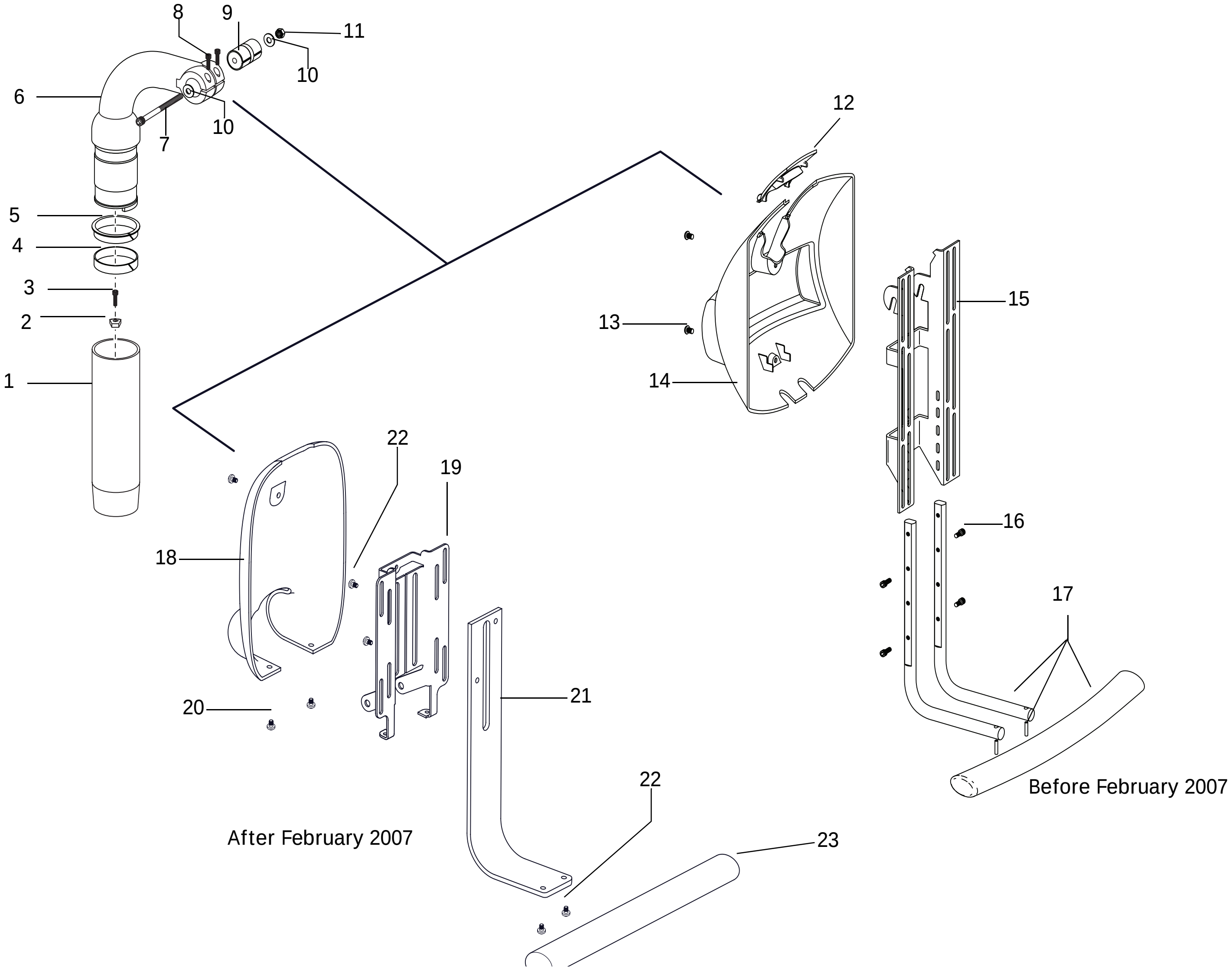
MONITOR MOUNT IPB CONTENTS

- **Front Mount Monitor Mount (531), page 304**
- **Support Side Monitor Mount (561), page 307**
- **Support Side Monitor (561) Tray Holder, page 310**
- **A-dec 500 Track Monitor Mount, page 312**
- **A-dec 500 Track Monitor Mount Components, page 315**
- **A-dec 500 Track Monitor Mount Trolley Assembly (Before February 2007), page 318**
- **A-dec 500 Track Monitor Mount Trolley Assembly (After February 2007), page 320**

Front Mount Monitor Mount (531)

Item	Part Number	Description
1	77.0259.00	Extension bar, adapter
2	77.0300.00	Rotation limiter
3	001.088.00	Screw, rotation stop, 10-32 x 5/8" stainless steel
4	77.0103.00	Lower bearing, Surf 4
5	77.0102.00	Upper bearing, Surf 4
6	77.0114.01	Support arm, monitor mount
7	002.119.00	Screw, socket head, 1/4-20 x 2-3/4" stainless steel
8	001.088.00	Screw, socket head, 10-32 x 5/8" stainless steel
9	77.0497.00	Clutch assembly kit (includes 7,10 and 11)
10	004.141.00	Flat washer, .261 ID
11	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
12	77.0213.00	Small cover, surf 4
13	002.094.02	Screw, button head, 10-32 x 1/4" stainless steel
14	77.0026.00	Monitor mount cover (before February 2007)
15	77.0112.00	Mounting bracket (before February 2007)
16	002.130.00	Screw, socket head, 10-32 x 3/8"
17	77.0498.00	Handle bracket kit (before February 2007)
18	77.0631.00	Monitor mount cover (after February 2007)
19	77.0653.00	Mounting bracket, no power supply (after February 2007)
20	005.012.03	Screw, socket head, 10-32 x 3/8" stainless steel
21	77.0629.00	Handle arm (after February 2007)
22	005.143.00	Screw, 1/4 20 x 3/8", button head
23	77.0630.00	Handle, straight (after February 2007)

Figure 199 **Front Mount Monitor Mount (531) Components**

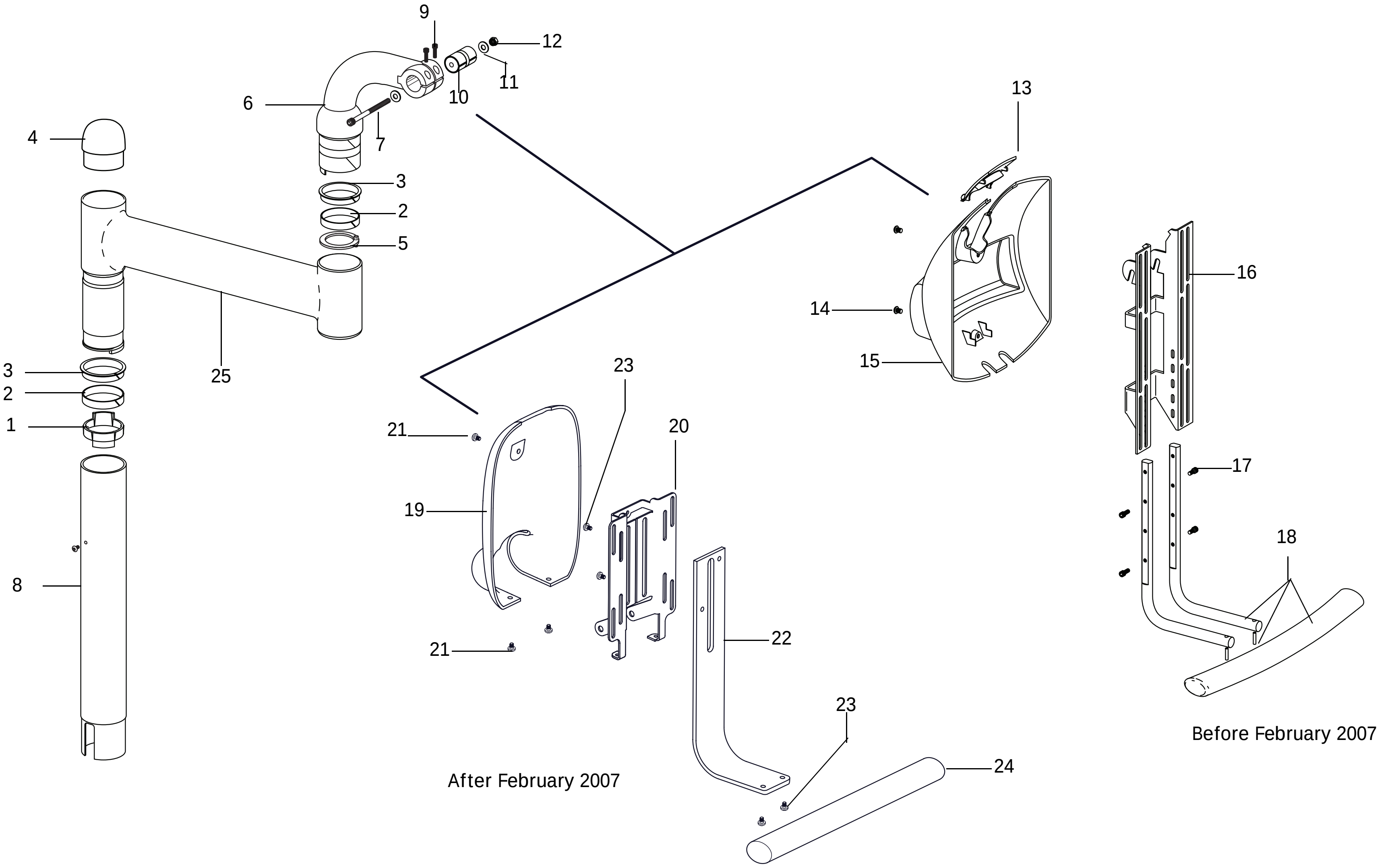

8
9
11
10
6
10
7
12
5
4
3
2
1
13
15
14
22
19
18
16
17
20
21
22
23
Before February 2007
After February 2007

Support Side Monitor Mount (561)

Item	Part Number	Description
1	77.0201.00	Rotation stop
2	77.0103.00	Bearing, lower
3	77.0102.00	Bearing, upper
4	28.1501.00	Cap
5	002.130.00 77.0652.00	Screw, 10-32 x 3/8" Rotation stop
6	77.0114.01	Support arm
7	002.119.00	Screw, socket head, 1/4-20 x 2-3/4" stainless steel
8	77.0199.00	Monitor post
9	001.088.00	Screw, adjustment 10-32 x 5/8"
10	77.0497.00	Clutch assembly kit (includes 7, 11 and 12)
11	004.141.00	Flat washer .261 ID
12	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
13	77.0213.00	Small cover, surf 4 (before February 2007)
14	002.094.00	Screw 10-32 x 1/4", stainless steel
15	77.0026.00	Monitor mount cover (before February 2007)
16	77.0112.00	Mounting bracket
17	002.130.00	Screw, socket head, 10-32 x 3/8"
18	77.0498.00	Handle bracket kit (before February 2007)
19	77.0631.00	Monitor mount cover (after February 2007)
20	77.0653.00	Mounting bracket, no power supply (after February 2007)

Item	Part Number	Description
21	005.012.03	Screw, button head, 10-32 x 3/8" stainless steel
22	77.0629.00	Handle arm (after February 2007)
23	005.143.00	Screws 1/4 20 x 3/8"
24	77.0630.00	Handle, straight (after February 2007)
25	77.0117.01	Rigid arm

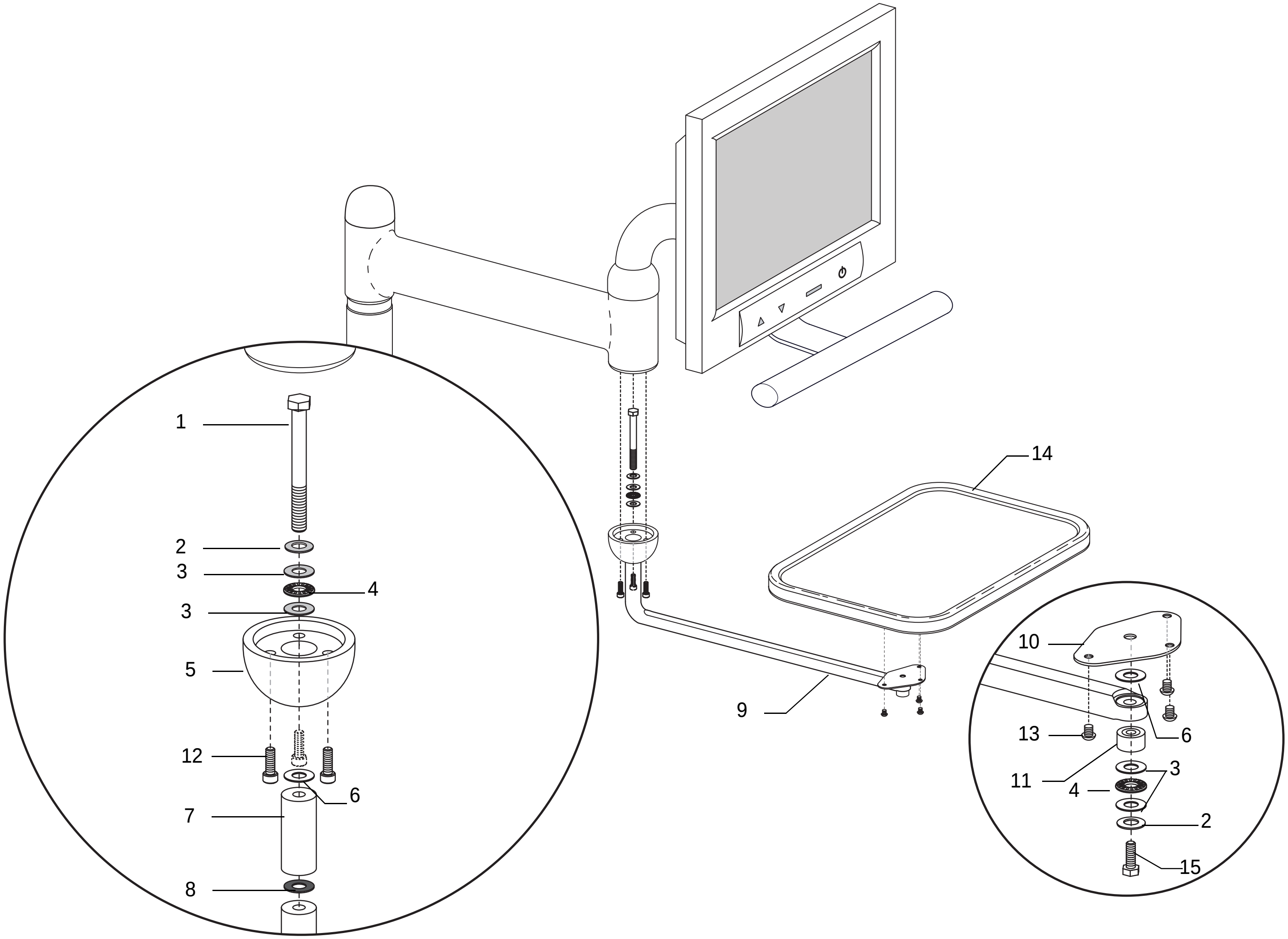
Figure 200 **Support Side Monitor Mount (561) Components**


9
12
11
10
6
7
4
3
2
5
13
16
14
15
25
3
2
1
23
20
21
19
17
18
8
21
22
23
24
Before February 2007
After February 2007

Support Side Monitor (561) Tray Holder

Item	Part Number	Description
1	005.157.00	Screw, 3/8-16 x 4"
2	004.019.00	Washer, spring .384 ID
3	004.172.00	Washer, thurst .375 ID
4	016.102.00	Thrust bearing, .375 ID
5	77.0365.00†	Hub
6	004.242.00	Washer, flat .385 ID
7	77.0197.00	Extender arm
8	004.021.00	Washer, flat, fiber .375 ID
9	77.0189.00	Arm, tray holder
10	77.0190.00	Bracket
11	77.0198.00	Cover
12	002.112.00	Screw, 10-32 x 7/8"
13	005.012.03	Screw, 10-32 x 3/8"
14	77.0071.00	Tray holder, large
15	002.023.01	Screw hex head, 3/8 - 1 x 1/4 Hex HD screw
	75.0017.00	Standard tray holder (includes 1-15)

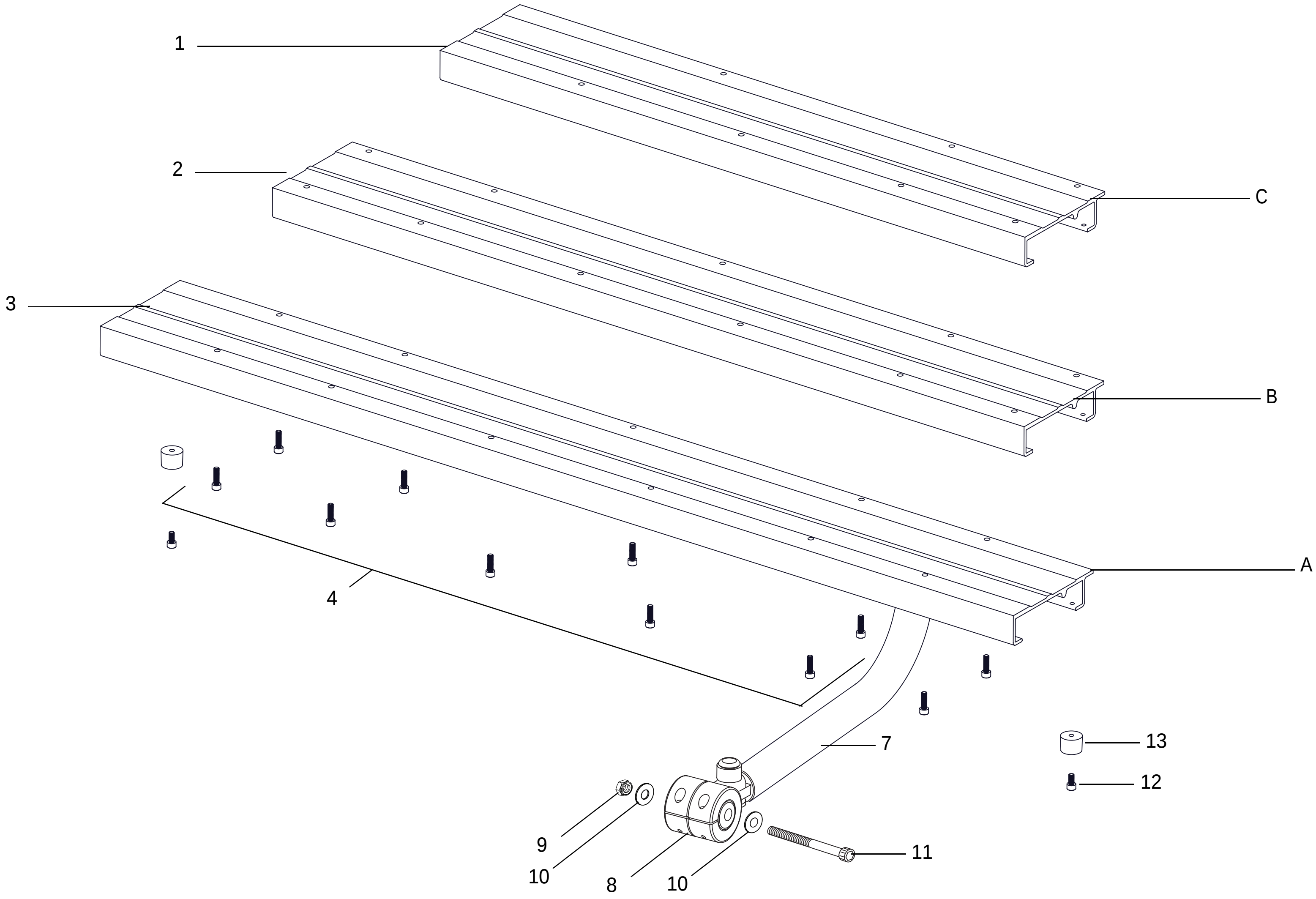
Figure 201 **Support Side Monitor mount Tray Holder Components(561)**


1
2
3
4
3
5
12
6
7
8
14
9
10
13
6
11
3
4
2
15

A-dec 500 Track Monitor Mount

Item	**Part Number**	**Description**
1	77.0438.02	Track, monitor mount, 25" (635 mm) (replace with 77.0546.00)
2	77.0438.01	Track, monitor mount, 32-1/2" (825.5 mm) (replace with 77.0545.00)
3	77.0438.00	Track, monitor mount, 40" (1016 mm) (replace with 77.0544.00)
4	001.088.00	Screw, socket head, 10-32 x 5/8", stainless steel
7		Monitor support arm assembly (see Figure 203 on page 317)
8	56.1006.00	Monitor mounting assembly (see Figure 203 on page 317)
9	006.052.00	Locking nut, 1/4-20 x 7/16" x 5/16"
10	004.141.00	Washer, flat .261 ID
11	002.119.00	Screw, socket head 1/4-20 x 2-3/4"
12	003.011.01	Screw, pan head 10 x 1-1/4", package of 5
13	042.644.00	Bumper
A	77.0544.00	Monitor mount track assembly 40" (1016 mm) (includes items 3-8)
B	77.0545.00	Monitor mount track assembly, 32-1/2" (825.5 mm) (includes items 2, 4, 5, 6, 7 and 8)
C	77.0546.00	Monitor mount track assembly, 25" (635 mm) (includes items 1, 4, 5, 6, 7 and 8)

Figure 202 **A-dec 500 Monitor Track Mount**

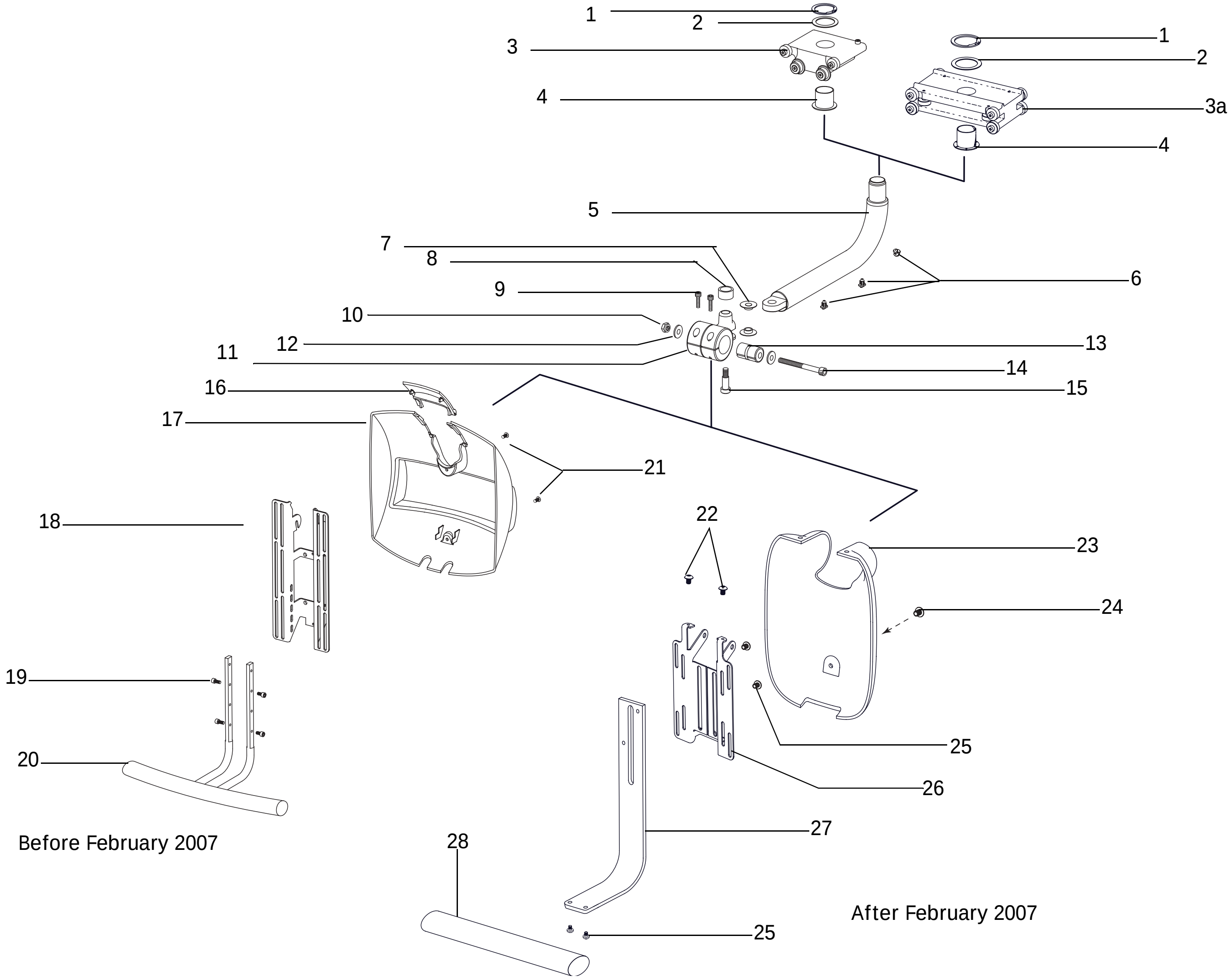

1
2
3
C
B
A
4
7
13
12
9
10
8
10
11

A-dec 500 Track Monitor Mount Components

Item	**Part Number**	**Description**
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3		Trolley assembly (see Figure 204 on page 319)
3a		New trolley assembly (see Figure 204 on page 319)
4	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG
5	56.1005.00*	Monitor support arm assembly (includes items 1,2,4,6 and 7)
6	025.081.00	Holder, flat tie
7	77.0459.00	Bushing, flanged
8	024.092.00	Tubing, clear, 7/8" OD
9	001.088.00	Adjustment screw, 10-32 x 5/8"
10	006.052.00	Lock nut, 1/4-20 x 7/16" x 5/16"
11	56.1006.00*	Monitor mounting hub assembly (includes items 8, 9 and 15)
12	004.141.00	Washer, flat .261 ID
13	77.0497.00	Clutch assembly kit (includes 19, 20 and 22)
14	002.119.00	Screw, socket head 1/4-20 x 2-3/4"
15	001.145.01	Screw, socket shoulder, 5/16-18 x 3/8 x 3/4
16	77.0213.00	Small cover, surf 4 (before February 2007)
17	77.0026.00	Monitor mount cover (before February 2007)
18	77.0112.00	Mounting bracket (before February 2007)
19	002.130.00	Screw, socket head, 10-32 x 3/8"
20	77.0498.00	Handle basket kit (before February 2007)
21	002.094.02	Screw, button head socket, 10-32 x 1/4", stainless steel
22	005.012.03	Screw, socket head 10-32 x 3/8"

Item	**Part Number**	**Description**
23	77.0631.00	Monitor mount cover (after February 2007)
25	005.143.00	Screw 1/4 20 x 3/8" (after February 2007)
26	77.0653.00	Bracket, no power supply (after February 2007)
27	77.0629.00	New handle arm (after February 2007)
28	77.0630.00	Handle arm, straight (after February 2007)

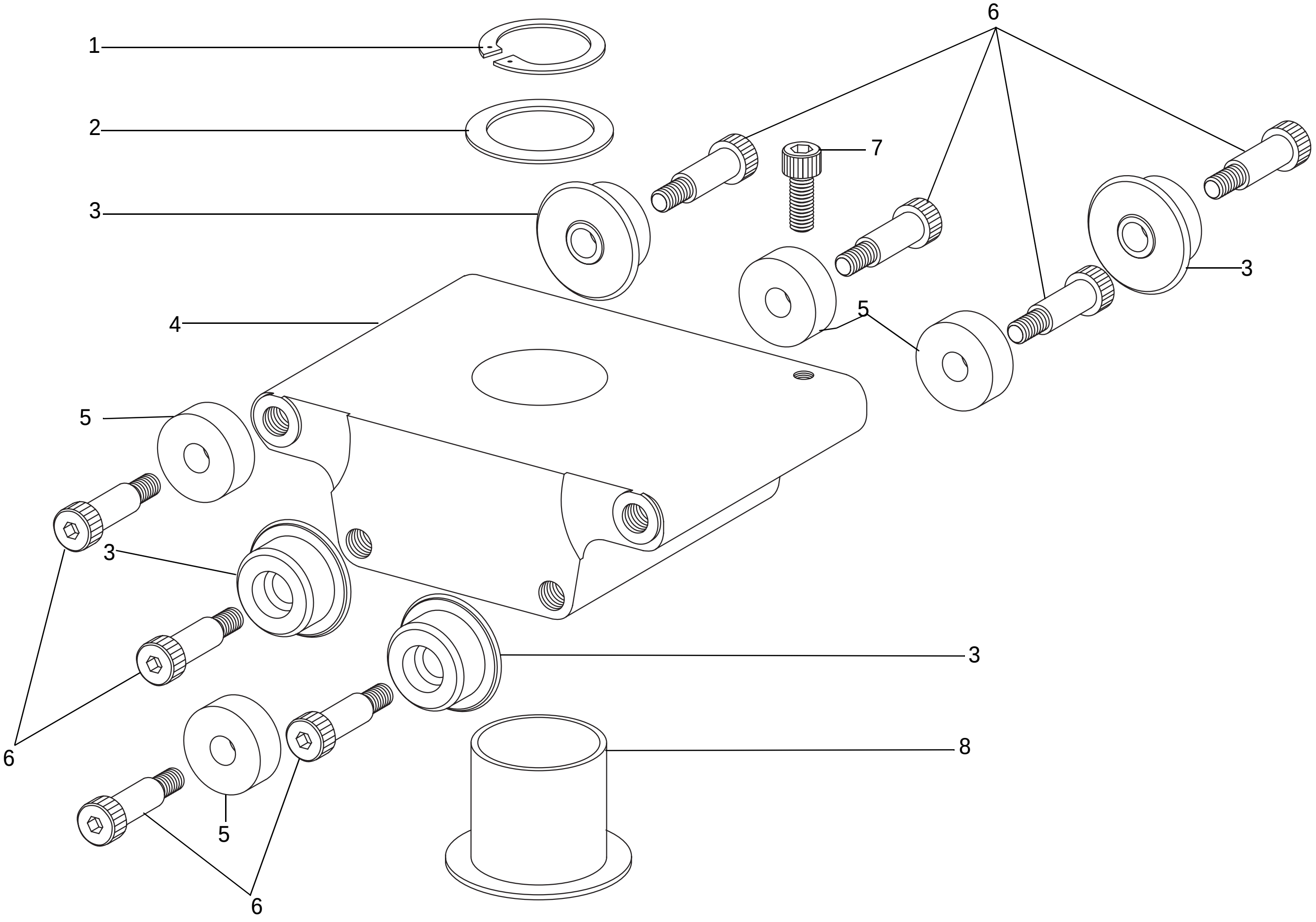
Figure 203 **A-dec 500 Track Monitor Mount Components**


1
2
3
4
1
2
3a
4
5
7
8
9
6
10
12
11
13
14
15
16
17
21
18
22
23
24
19
20
25
26
27
28
25
Before February 2007
After February 2007

A-dec 500 Track Monitor Mount Trolley Assembly (Before February 2007)

Item	Part Number	Description
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3	77.0457.00	Caster, monitor trolley
4	77.0437.00	Carrier, monitor trolley
5	016.061.00	Ball bearing, 1/4 ID x 3/4 OD
6	001.138.00	Screw, socket shoulder, 10-24 x 1/4" x 5/8"
7	002.135.00	Screw, socket head 10-32 x 1/2", stainless steel
8	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG

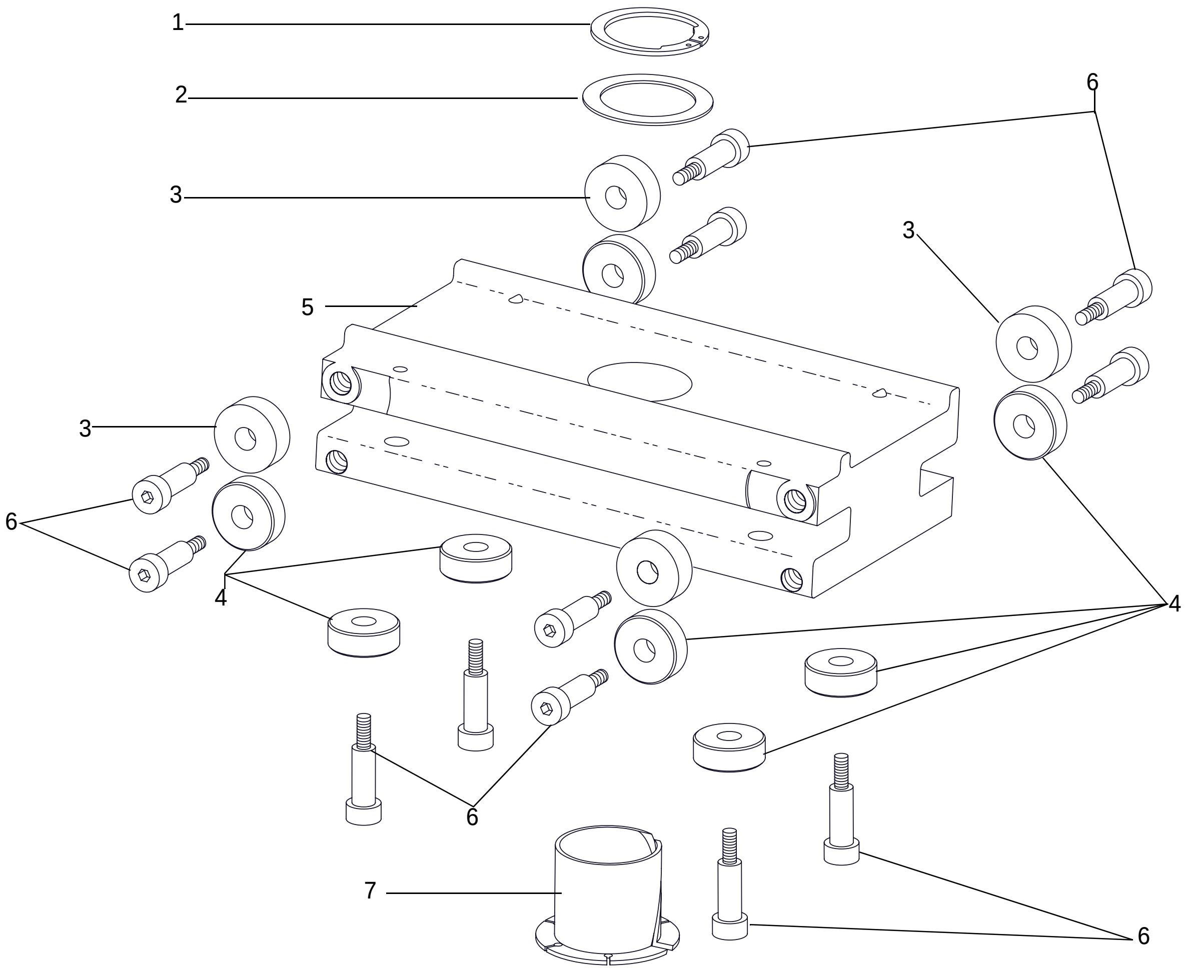
Figure 204 **Trolley Assembly (Before February 2007)**



A-dec 500 Track Monitor Mount Trolley Assembly (After February 2007)

Item	Part Number	Description
1	010.012.00	Retaining ring, external
2	004.207.00	Washer, flat, 1.00 x 1.362 x .03, stainless steel
3	016.061.00	Ball bearing, 1/4 ID x 3/4 OD
4	56.1081.00	Caster, monitor trolley
5	56.1082.00	Carrier, trolley
6	001.138.00	Screw, socket shoulder, 10-24 x 1/4" x 5/8"
7	77.0458.00	Bushing, flanged, 1.00 OD x 1.00 LG

Figure 205 **Trolley Assembly (After February 2007)**



9

DENTAL LIGHTS

This section provides information related to service, maintenance, and adjustments of A-dec dental lights. Detail on how to service the A-dec 500 and 6300 dental lights is presented. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

SYSTEMS CONTENTS

- **Product Overview, page 324**
- **Service/Usage Information, page 326**
- **Adjustments/Maintenance, page 339**
- **Illustrated Parts Breakdown, page 347**

Figure 206 **A-dec Dental Light**

PRODUCT OVERVIEW

The A-dec dental lights provide color-corrected, low UV light and three intensity settings. The lights are controlled from the light head, or from the touchpad on an A-dec 500 delivery system or assistant’s instrumentations. Specifications are subject to change without notice.

Dental Light Specifications

These lights provide color-corrected, low UV light, and three intensity settings. The lights are controlled from the light head, or from the touchpad on an A-dec 500 delivery system, or assistant’s instrumentation.

Electrical

100 VAC, 110-120 VAC, or 220-240VAC (Post-, Ceiling-, Wall-, Preference- and Track-mounted Lights)

Operating wattage: 96 watts

Heat output: 325 BTU/hour

Lamp

Lamp: Quartz Xenon Halogen, single-end prongs, extended life

Lamp rating: 24V/150 watts

Color temperature: 5000 Kelvin

Light pattern: 3.3" x 6.3" at 27.6" (85 mm x 160 mm at 700 mm)

Nominal Light Intensity

Composite: 8,000 lux (743 fc)

Medium: 20,000 lux (1858 fc)

High: 24,000 lux (2230 fc)

On/Off Functions

The dental light has additional features when used with an A-dec 500 system.

On/Off Switch

Press and hold the **Dental Light** button on the touchpad to turn off the dental light On/Off. Change the position of the switch on the dental light to turn on/off the light at the light head.

Auto On/Off Function

The dental light turns On, when the A-dec 500 chair reaches programmed positions 1, 2 or 3. The dental light turns Off, when **Position O** is pressed. When **Position 3** is used as a last position/return function, the light turns Off when **Position 3** is pressed the first time. It turns On after the button is pressed a second time when it reaches the last position.

The Auto On/Off feature is disabled by pressing and holding the **Program** button and the **Dental Light** button simultaneously for three seconds. One beep confirms that the auto On/Off feature is disabled. To enable the Auto On/Off feature, repeat. Three beeps confirms that Auto On/Off is enabled.

Three-Way Switch

The dental light button on the touchpad works as a three-way switch with the On/Off switch on the dental light, allowing the light to turn On or Off from the touchpad or the On/Off switch.

Intensity Switches

There are three intensity settings for the A-dec 571 and 6300 dental lights. Move the intensity switch to select the high, medium or composite setting.

Press **Dental Light** on the A-dec 500 touchpad to toggle between intensity settings. The dental light can toggle between composite and high intensity settings or composite and medium intensity settings, depending on the location of the dental light intensity switch. The indicator light next to the touchpad dental light button flashes when in the composite setting mode.

SERVICE/USAGE INFORMATION

Identifying Switch Connections

Intensity Switch

The three-position intensity switch is used to select light intensity at one of three settings: high, medium or composite. The replacement kit for the intensity switch is P/N 43.0054.00.

Position	Voltage	Wire
Medium	5 VDC	Blue and Yellow
High	0 VAC	Blue
Composite	0 VDC	Yellow

NOTE All DC voltage measurements are taken with the black and meter lead on the black/white wire.

On/Off Switch

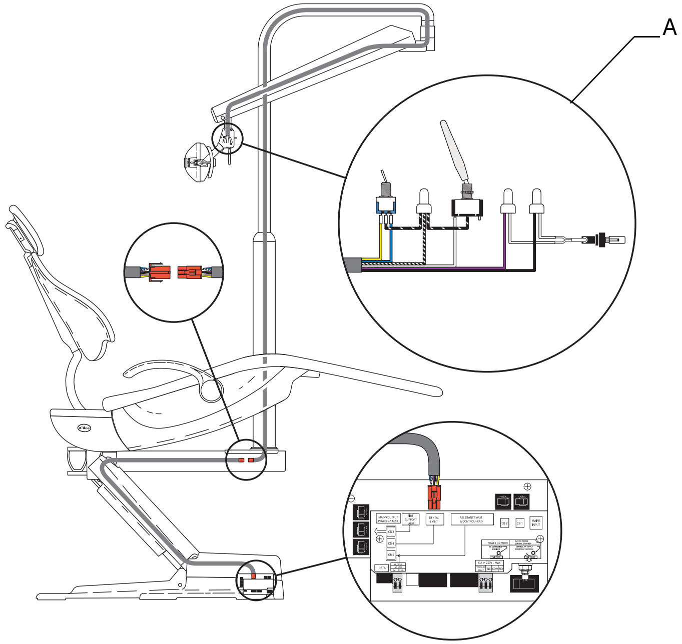
The On/Off switch is used to manually turn on or off the dental light from the light head. The replacement kit for the On/Off switch is P/N 90.1039.00.

Position	Voltage	Wire
Open	5 VDC	White
Closed	0 VAC	White

NOTE All DC voltage measurements are taken with the black and meter lead on the black/white wire.

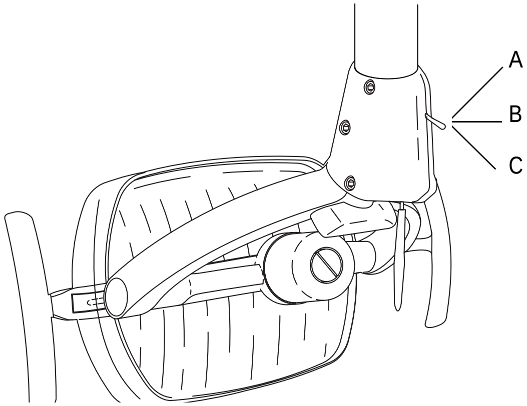
A-dec 571 Light

Figure 207 A-dec 571 Light Switch Connections



(A) Switch and Lamp Connections

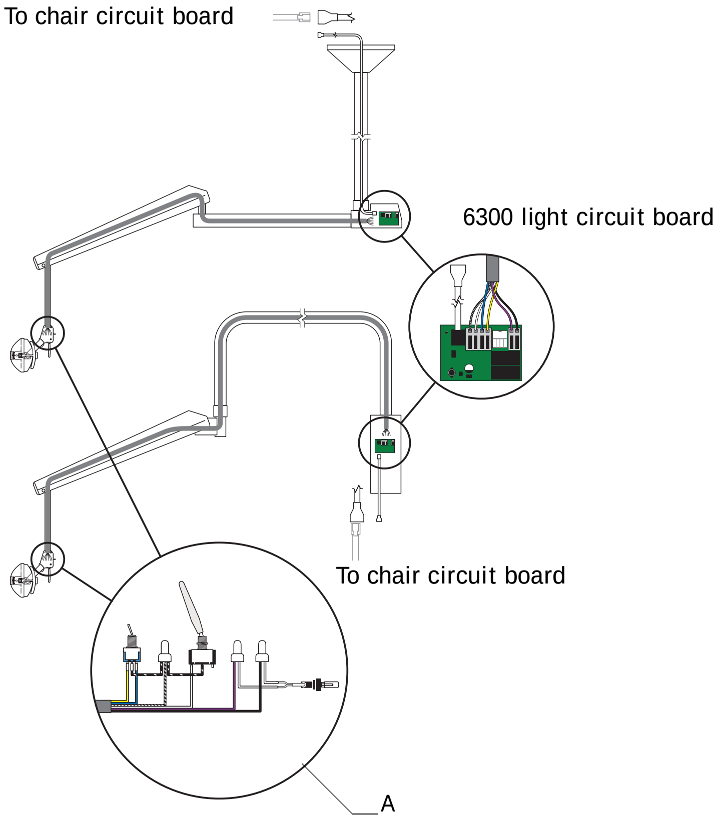
Figure 208 Light Intensity Setting



(A) High; (B) Medium; (C) Composite

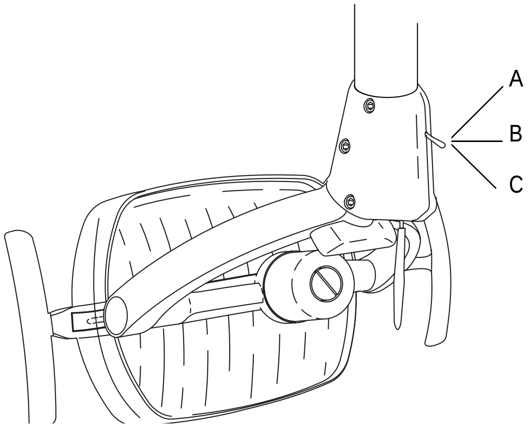
Ceiling-, Wall - and Preference-Mount Lights

Figure 209 A-dec 6300 Ceiling and Wall-mounted Light Switch Connections and Data Line


To chair circuit board
6300 light circuit board
To chair circuit board
A

(A) Switch and Lamp Connections

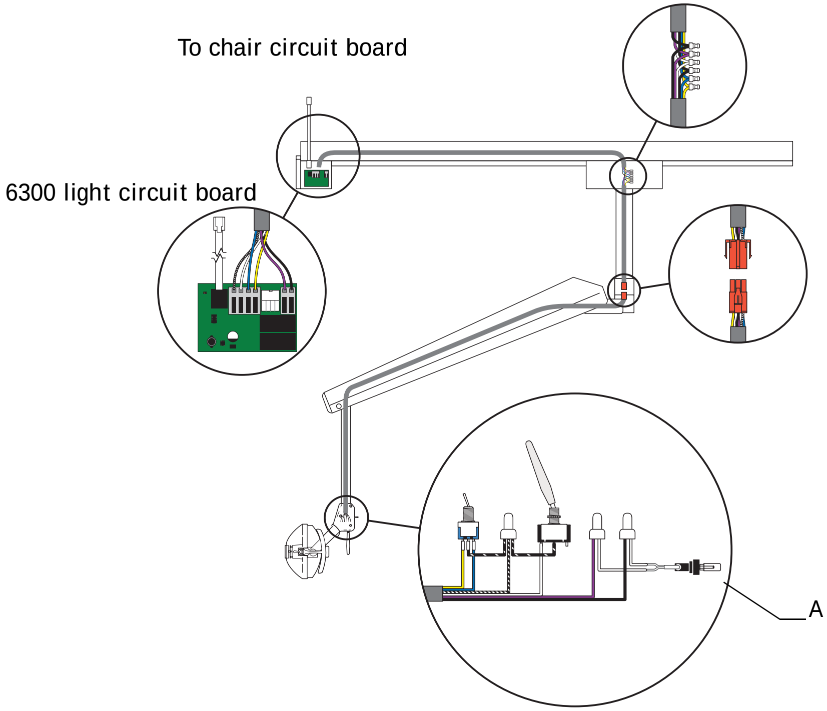
Figure 210 Light Intensity Setting



(A) High; (B) Medium; (C) Composite

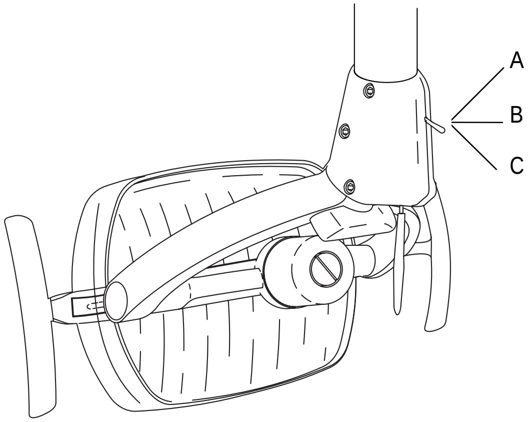
Track Light

Figure 211 A-dec 6300 Track Light Switch Connections and Data Line


To chair circuit board
6300 light circuit board
A

(A) Switch and Lamp Connections

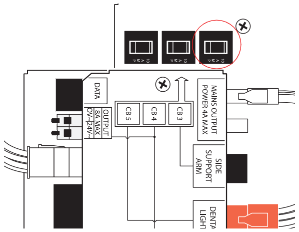
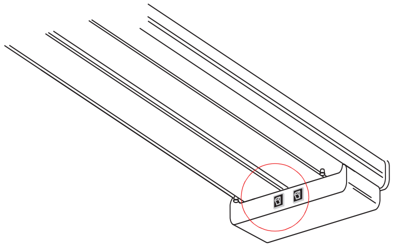
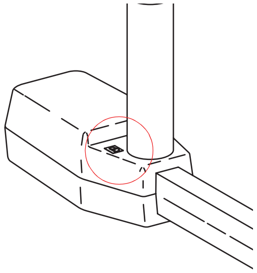
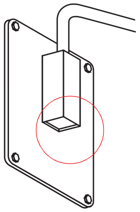
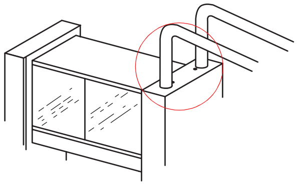
Figure 212 Light Intensity Setting



(A) High; (B) Medium; (C) Composite

Circuit Breakers

A circuit breaker will interrupt the flow of electricity under abnormal conditions. If the circuit breaker should trip, inspect the wiring to ensure there are no shorts, and reset the circuit breaker by flipping the switch.

Light Name	Circuit Breaker Location	Light Name	Circuit Breaker Location
A-dec 571 **NOTE** The circuit breaker for the A-dec 571 light is located on the chair power supply inside the chair motor pump area.	 10 AMP DATA OUTPUT 8A MAX 0V~24V~ CB 5 CB 4 CB 3 MAINS OUTPUT POWER 4A MAX SIDE SUPPORT ARM DENTA LIGH	**Track**	
Ceiling-mounted		**Wall-mounted**	
Preference-mounted			

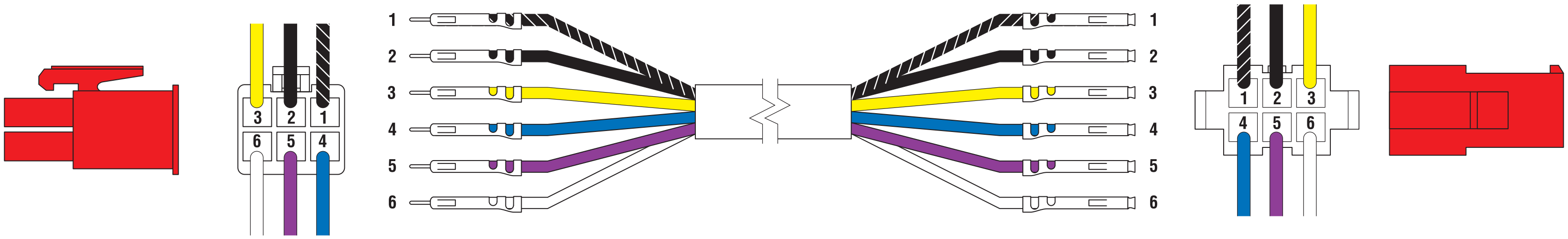
Power Cable

Part No: 28.1584.00

Pin	Voltage	Wire
1	0 VDC (circuit ground)	Black/White
2	0 VAC	Black
3	5 VDC = high or medium 0 VDC = composite	Yellow (composite)
4	5 VDC = medium or composite 0 VDC = high out	Blue (high)
5	17/16/12.1 VAC	Violet
6	5 VDC = On/Off toggle = open 0 VDC = On/Off toggle = closed	White (On/Off)

NOTE If Pin 3 and Pin 4 are 5 VDC, then the output voltage on Pin 5 is medium intensity.

Figure 213 **Power Cable**



Transformers

All voltages of transformers are the same part number but wired differently for each voltage.

Figure 214 **100 VAC Transformer (P/N 28.1588.00)**

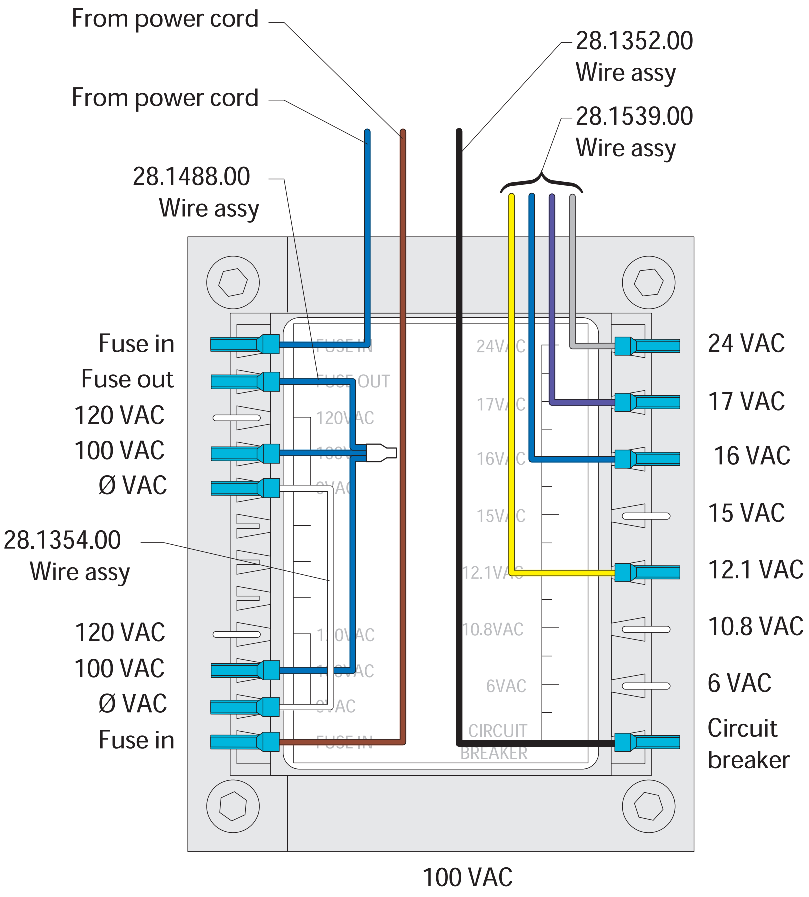

From power cord
From power cord
28.1352.00 Wire assy
28.1539.00 Wire assy
28.1488.00 Wire assy
Fuse in
Fuse out
120 VAC
100 VAC
Ø VAC
28.1354.00 Wire assy
120 VAC
100 VAC
Ø VAC
Fuse in
24 VAC
17 VAC
16 VAC
15 VAC
12.1 VAC
10.8 VAC
6 VAC
Circuit breaker
100 VAC

Figure 215 **110-120 VAC Transformer (P/N 28.1588.00)**

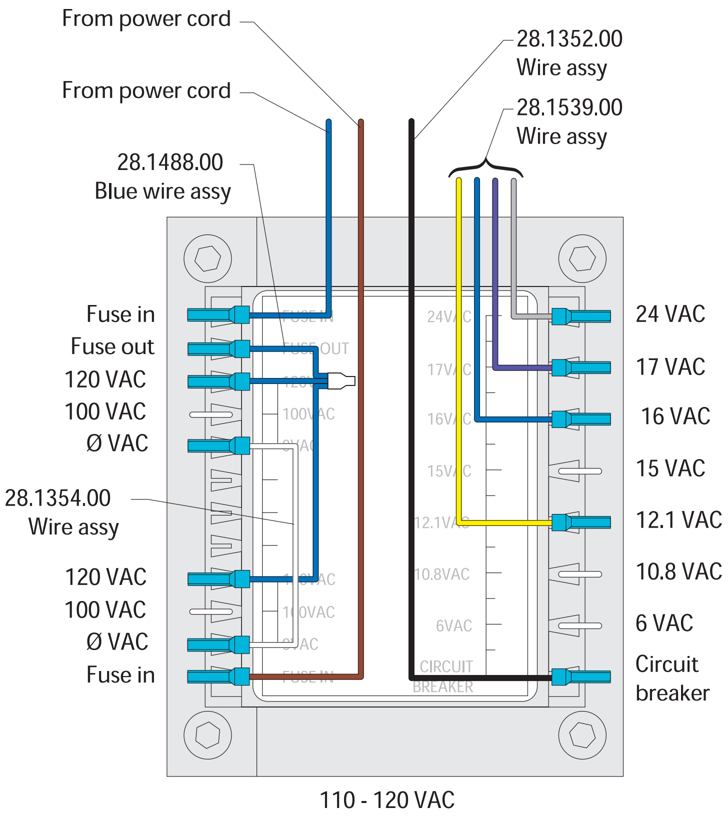
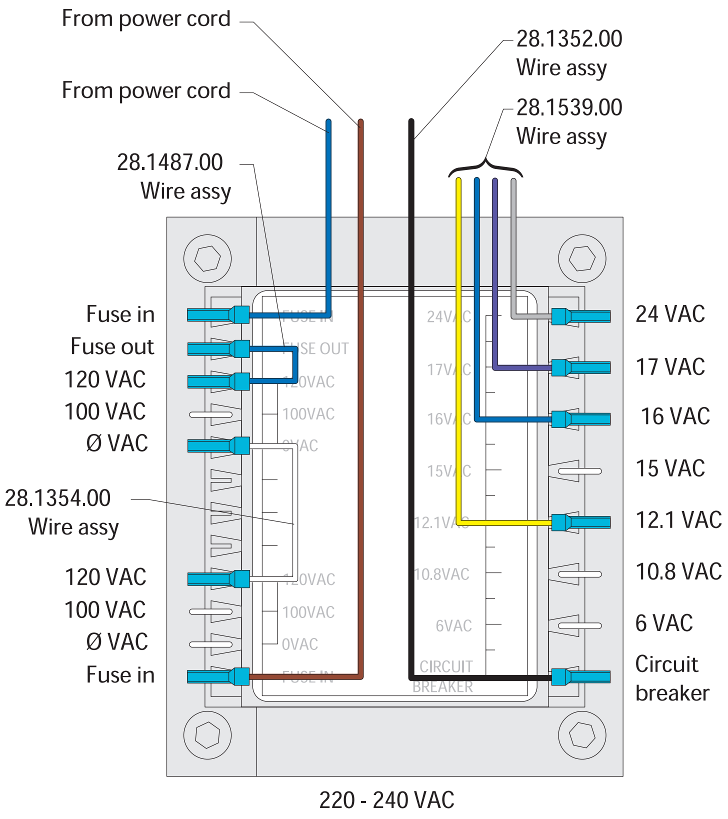

From power cord
From power cord
28.1488.00
Blue wire assy
28.1352.00
Wire assy
28.1539.00
Wire assy
Fuse in
Fuse out
120 VAC
100 VAC
Ø VAC
28.1354.00
Wire assy
120 VAC
100 VAC
Ø VAC
Fuse in
24 VAC
17 VAC
16 VAC
15 VAC
12.1 VAC
10.8 VAC
6 VAC
Circuit
breaker
110 - 120 VAC

Figure 216 **220-240 VAC Transformer (P/N 28.1588.00)**


From power cord
From power cord
28.1487.00
Wire assy
28.1352.00
Wire assy
28.1539.00
Wire assy
Fuse in
Fuse out
120 VAC
100 VAC
Ø VAC
28.1354.00
Wire assy
120 VAC
100 VAC
Ø VAC
Fuse in
24 VAC
17 VAC
16 VAC
15 VAC
12.1 VAC
10.8 VAC
6 VAC
Circuit
breaker
220 - 240 VAC

Circuit Board Components

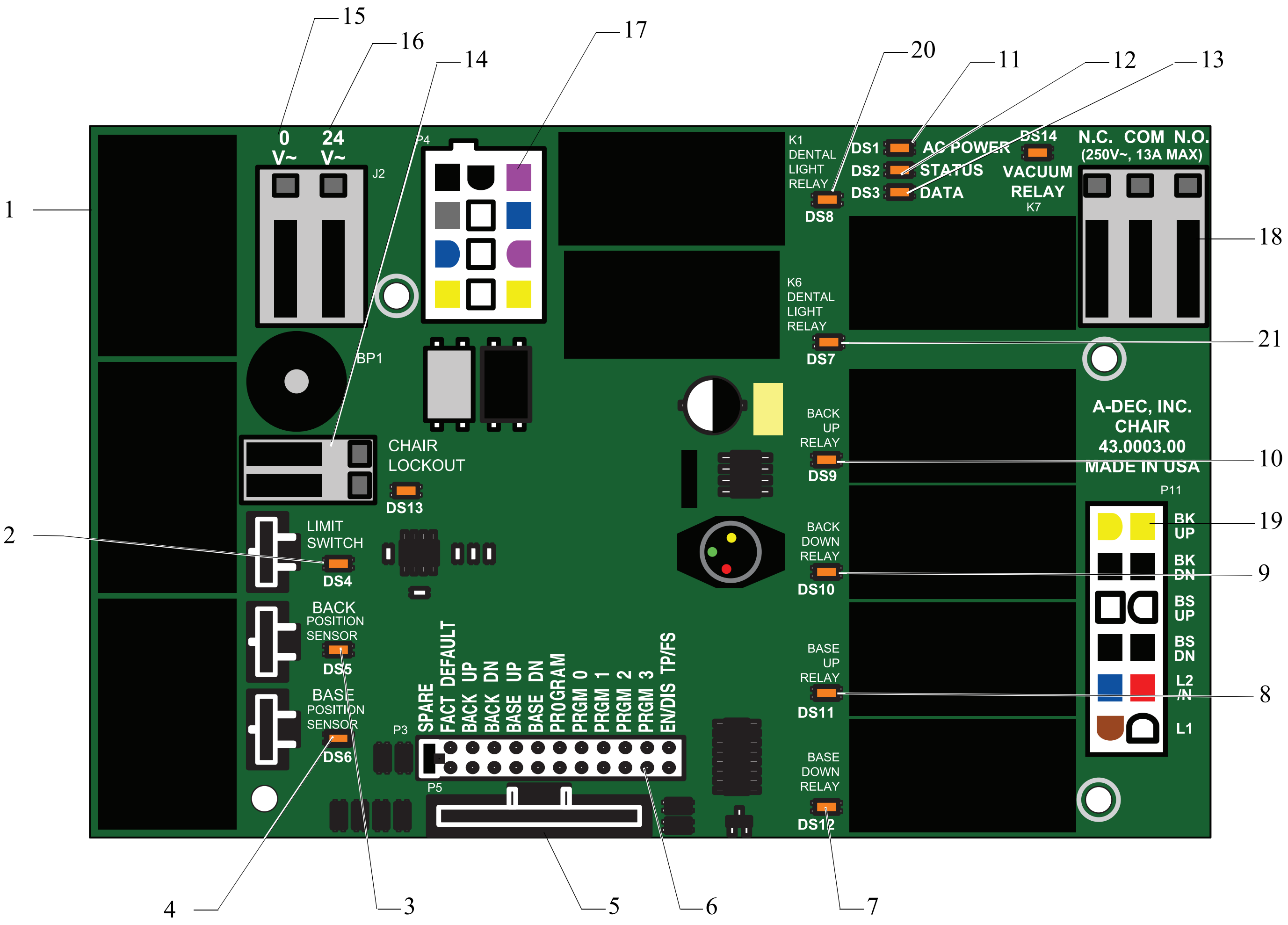
A-dec 511 Chair Circuit Board for A-dec 571 Lights

Part No: 90.1072.00

Item	Description
1	P7, P8, P9 - Data line ports
2	DS4 - Stop switch LED (limit switch) and P10 connector
3	DS5 - Back potentiometer LED and P1 connector
4	DS6 - Base potentiometer LED and P2 connector
5	P5 - Footswitch connector
6	P3 - Test points
7	DS12 - Base down LED and relay K5
8	DS11 - Base up LED and relay K4
9	DS10 - Back down LED and relay K3
10	DS9 - Back up LED and relay K2
11	DS1 - AC power LED
12	DS2 - Status LED
13	DS3 - Data LED
14	DS13 - Chair lockout LED and terminal strip J1
15	J2 - Ø VAC terminal strip (output)
16	J2 - 24 VAC terminal strip (output)
17	P4 - Input power and dental light connector
18	J3 - Vacuum relay K7 output terminal strip
19	P11 - Pump motor and solenoid connector
20	DS8 - Dental light LED relay and K1
21	DS7 - Dental light LED relay and K6

Function	K1 (DS8)	K6 (DS7)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

Figure 217 **A-dec 511 Chair Circuit Board Components**


15
16
14
17
20
11
12
13
0 V~
24 V~
J2
P4
K1 DENTAL LIGHT RELAY
DS8
DS1
AC POWER
DS2
STATUS
DS3
DATA
DS14
VACUUM RELAY
K7
N.C. COM N.O.
(250V~, 13A MAX)
1
18
K6 DENTAL LIGHT RELAY
DS7
21
BP1
A-DEC, INC.
CHAIR
43.0003.00
MADE IN USA
CHAIR LOCKOUT
DS13
BACK UP RELAY
DS9
10
P11
2
LIMIT SWITCH
DS4
BACK DOWN RELAY
DS10
BK UP
19
BK DN
9
BS UP
BS DN
L2 /N
L1
8
BACK POSITION SENSOR
DS5
BASE POSITION SENSOR
DS6
SPARE
FACT DEFAULT
BACK UP
BACK DN
BASE UP
BASE DN
PROGRAM
PRGM 0
PRGM 1
PRGM 2
PRGM 3
EN/DIS TP/FS
P3
P5
BASE UP RELAY
DS11
BASE DOWN RELAY
DS12
4
3
5
6
7

LED Identification

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24 VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	Green, steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS message
DS4 - Chair limit switch	Off	Closed, (normal)
	Red	Open, (activated)
DS13 - Chair lockout	Off	Open, (normal)
	Red	Closed, (activated)
DS5 + DS6 - Chair potentiometers	Off	Potentiometer: • Not connected or bad connection • Moving in wrong direction • Limited range of motion, or • Cable is not on wheel.
	Yellow, steady	Normal operation
	Yellow, fast blink	Upper end of travel
DS9, DS10, DS11, DS12 - Chair relay LEDs	Off	Relay is off
	On	Relay is on
DS7, DS8 - Dental light relay LEDs	Off	Relay is off
	On	Relay is on
DS14 - Vacuum relay LED	Off	Relay is off
	On	Relay is on

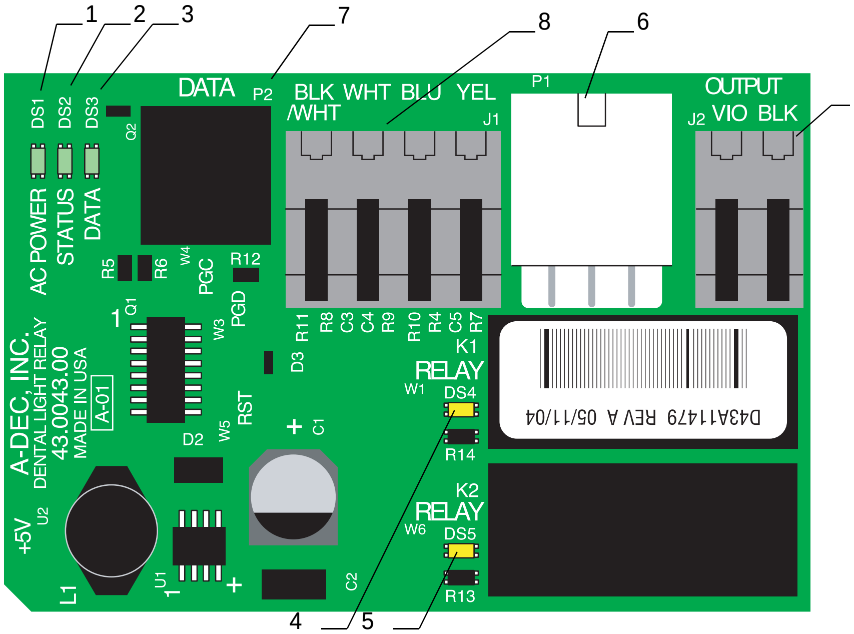
6300 Dental Light Relay Circuit Board

Part No: 28.1577.00

Item	Description
1	DS1 - AC power LED
2	DS2 - Status LED
3	DS3 - Data LED
4	DS4 - Dental light relay
5	DS5 - Dental light relay
6	P1 - Input power
7	P2 - Data line port
8	J1 - Toggle switch inputs
9	J2 - Dental light output power

Function	K1 (DS4)	K2 (DS5)	Output
Off	Off	Off	0 VAC
High intensity	On	Off	17 VAC
Composite intensity	Off	On	12 VAC
Medium Intensity	On	On	16 VAC

Figure 218 6300 Dental Light Relay Circuit Board


1
2
3
7
8
6
4
5
DS1
DS2
DS3
Q2
DATA
P2
BLK WHT BLU YEL
/WHT
J1
P1
OUTPUT
J2 VIO BLK
AC POWER
STATUS
DATA
R5
R6
W4
PGC
R12
Q1
W3
PGD
R11
R8
C3
C4
R9
R10
R4
C5
R7
K1
RELAY
W1
DS4
R14
D3
RST
W5
D2
C1
A-DEC, INC.
DENTAL LIGHT RELAY
43.0043.00
MADE IN USA
A-01
D43A11479 REV A 05/11/04
K2
RELAY
W6
DS5
R13
+5V
U2
L1
U1
C2

LED Identification

LED	Status	Description
DS1 - AC power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned off, no line voltage
	Green, steady	24 VAC at the terminal strip
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed
	Green, steady	Normal operation
DS3 - Data LED	Off	No DCS communication, not connected to the DCS, or DCS has failed
	Green, steady	Detects active DCS
	Green, blinking	Valid DCS message
DS4, DS5 - Dental light relay LEDs	**DS4, DS5**	
	Off, Off	Dental light off
	On, Off	High intensity
	Off, On	Composite intensity
	On, On	Medium intensity

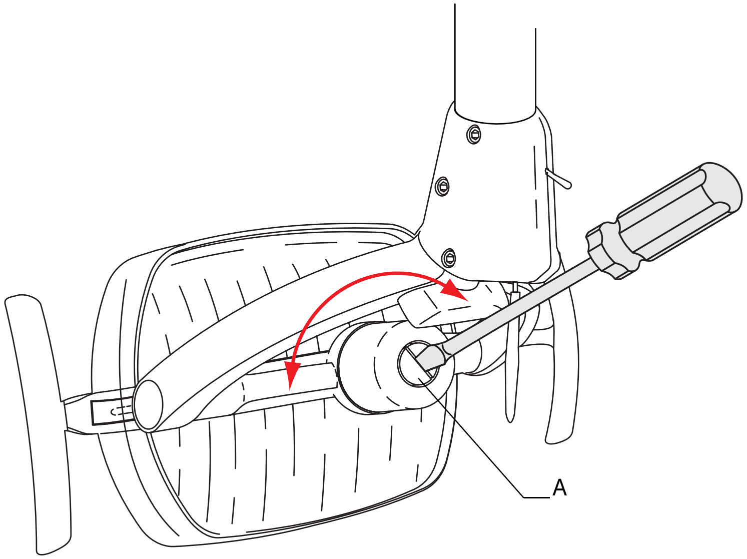
ADJUSTMENTS/MAINTENANCE

The light is preset for proper illumination at 27.6 inches (700 mm) from the black nose piece to the oral cavity. The light has a focal adjustment range between 18" and 31" (460 mm and 790 mm).

Focus

1. Place a white towel over the chair headrest to represent the oral cavity.
2. Turn the light ON.
3. Position the light head at the distance normally used when working in the oral cavity (select a distance representative of most procedures).
4. Use a large screwdriver to turn the focus adjusting screw until the light, within the borders of the light pattern, is most uniform.

Figure 219 Focus Adjustment



(A) Adjustment Screw

Light Head Rotation

The light head needs adjusting if it is difficult to position, moves too easily, or tends to drifts out of position.

Left/Right Rotation

Turn the adjustment screws beginning with the screw at the top of the switch housing.

- Light head moves too easily, or tends to drift out of position. Increase the friction by turning the screws clockwise.
- Light is difficult to move. Loosen the friction by turning the screws counterclockwise.

Figure 220 **Left/Right Rotation**

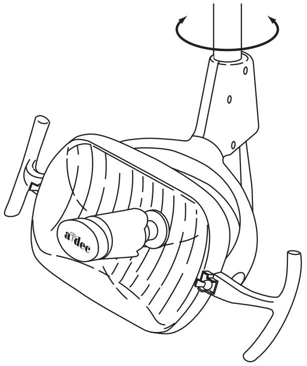
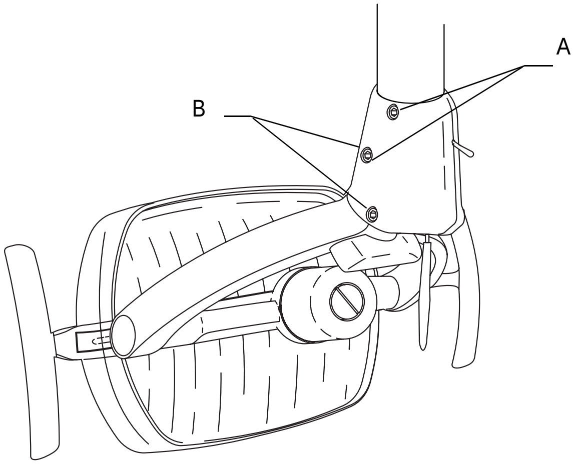


Figure 221 **Rotation Adjustment**



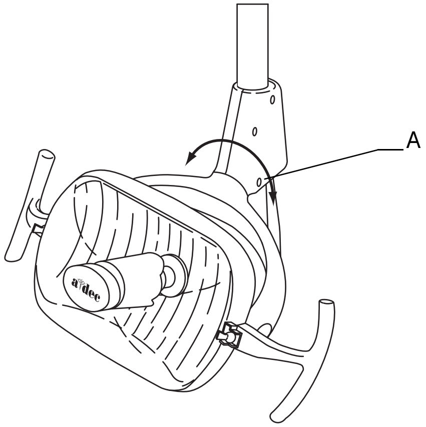
(A) Left/Right Rotation Tension Screw; (B) Diagonal Rotation Tension Screw

Diagonal Rotation (Third Axis)

Turn the adjustment screws, beginning with the screw at the bottom of the switch housing.

- Light head moves too easily, or tends to drift out of position, increase the friction by turning the screws clockwise.
- Light head is difficult to move. Loosen the friction by turning the screw counterclockwise.
- Tighten the adjustment screw until they are tight to eliminate all movement in the diagonal axis.

Figure 222 **Diagonal Axis Rotation**



(A) Diagonal Adjustment

Up/Down Rotation (Vertical)

This adjustment only needs to be made to one side of the light head.

1. Loosen the setscrew.
2. Remove the light yoke plug.
3. Use a large flat-blade screwdriver to turn the adjustment screw under the light yoke plug.

   - Light head moves too easily, or tends to drift out of position. Increase the friction by turning the screw clockwise.
   - Light head is difficult to move. Loosen the friction by turning the screw counterclockwise.
   - Retighten the setscrew, and reinstall the light yoke plug.

Figure 223 Up/Down Rotation

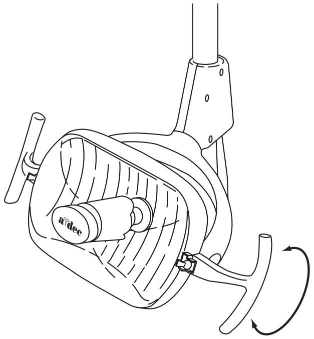
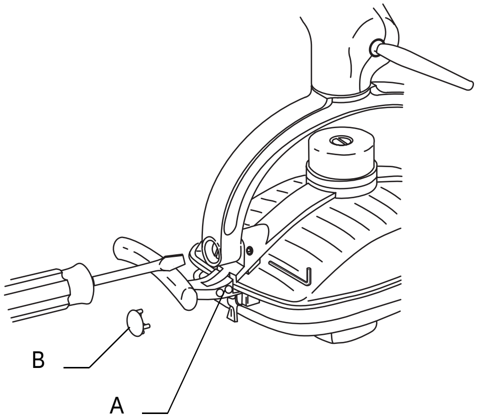


Figure 224 Up/Down Rotation Adjustment



(A) Setscrew; (B) Light Yoke Plug

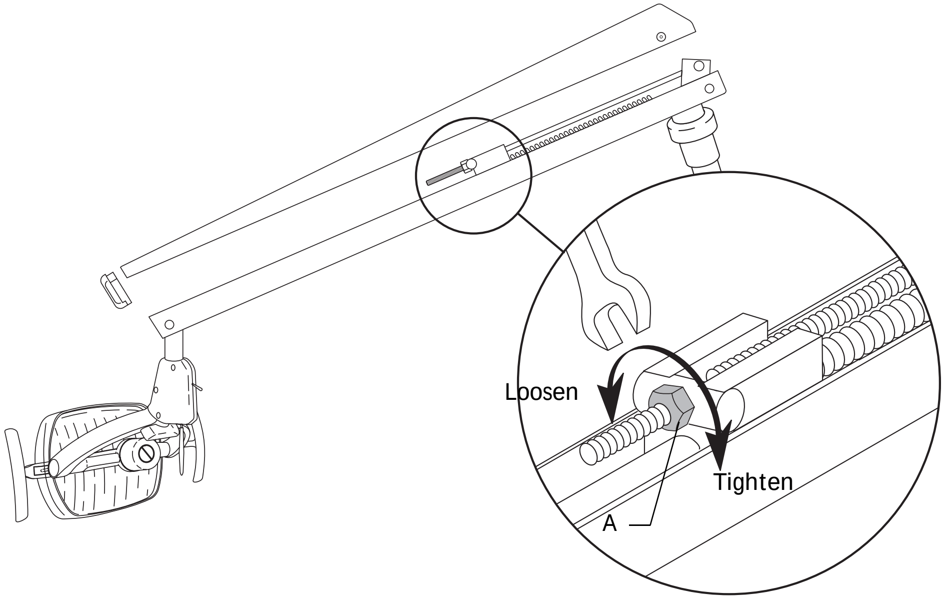
Flexarm

Remove the screw and cover from the flexarm. Turn the tension adjustment nut inside the flexarm using a 1/2" open end wrench. Tighten the nut by turning it clockwise, if the flexarm moves too easily, or tends to drift down by itself. Loosen the nut by turning it counterclockwise, if the arm drifts up.

NOTE The weight of the flex arm cover affects the flex arm counter-balance. Set cover on flex arm to test tension adjustment.

NOTE An optional travel stop limit kit (P/N 90.1044.00) can be installed to limit the upward and downward motion of the flexarm.

Figure 225 Flexarm Adjustments



(A) Adjustment Nut

Light Shield Cleaning

1. Turn Off the dental light.

WARNING To avoid personal injury, be sure that the light has cooled before cleaning it.

---

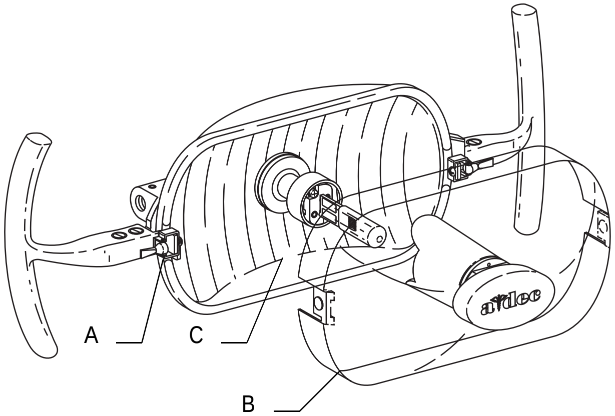
2. Release the toggles on either side of the light to remove the light shield.
3. Use a 100% cotton gauze pad or a soft, dry, lint-free cloth to clean the light shield and reflector.

If necessary, soak the pad or cloth with water or with a diluted solution of mild dish washing liquid before cleaning. Make certain no residue remains on the surface.

Do not use abrasives or chlorine (such as household bleach) on the surface of the reflector. These can damage or discolor the reflector surface, impairing the effectiveness.

CAUTION Do not rub heavily, clean the light shield when it is hot, or soak the shield assembly in cleaning solution. Doing so may damage the shield assembly components. Clean the light shield only as instructed.

Figure 226 **Light Shield Cleaning**



(A) Toggle; (B) Light Shield; (C) Reflector

Lamp Replacement

Pull the spare lamp holder from the light head. Remove the lamp from the holder, but do not remove the outer wrapper. Finger oils can affect light performance and severely limit lamp life. If lamp is inadvertently touched, gently clean it with cotton dampened with isopropyl or ethyl alcohol.

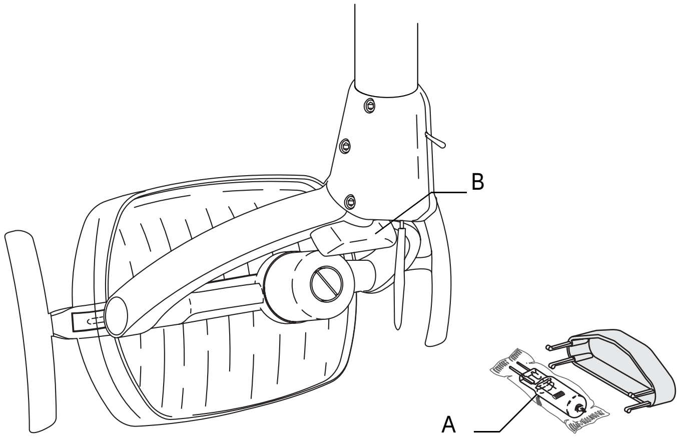
⚠ **WARNING** To avoid burning fingers, allow the lamp to cool before removing. Never operate the light with the light shield removed. The clear shield minimizes UV light output. The light shield is also protection in the unlikely event that the lamp shatters.

---

1. Turn Off the light, and allow the light to cool.
2. Release the toggles on the light shield and set the shield aside.
3. Use a gauze pad or cloth to protect fingers. Carefully pull the old lamp from its socket and discard.
4. Hold the new lamp in its outer wrapper with the pins facing away, and carefully insert it in the socket. The lamp base is fragile and can break under excess pressure.
5. Remove and discard the outer wrapper, reinstall the light shield, and secure with the toggles.
6. Verify the operation of the light by turning it on and operating it at each intensity setting.

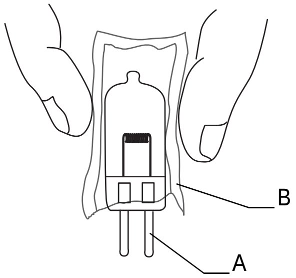
⚠ **CAUTION** Use of halogen lamp other than A-dec P/N 041.179.01 (OSRAM HLX 64640, 150W 24V) may result in damage to the lamp socket.

Figure 227 **Remove Lamp from Holder**



(A) Lamp; (B) Holder

Figure 228 **Insert Lamp**



(A) New Lamp; (B) Outer Wrapper

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to the dental light.

Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

DENTAL LIGHT IPB CONTENTS

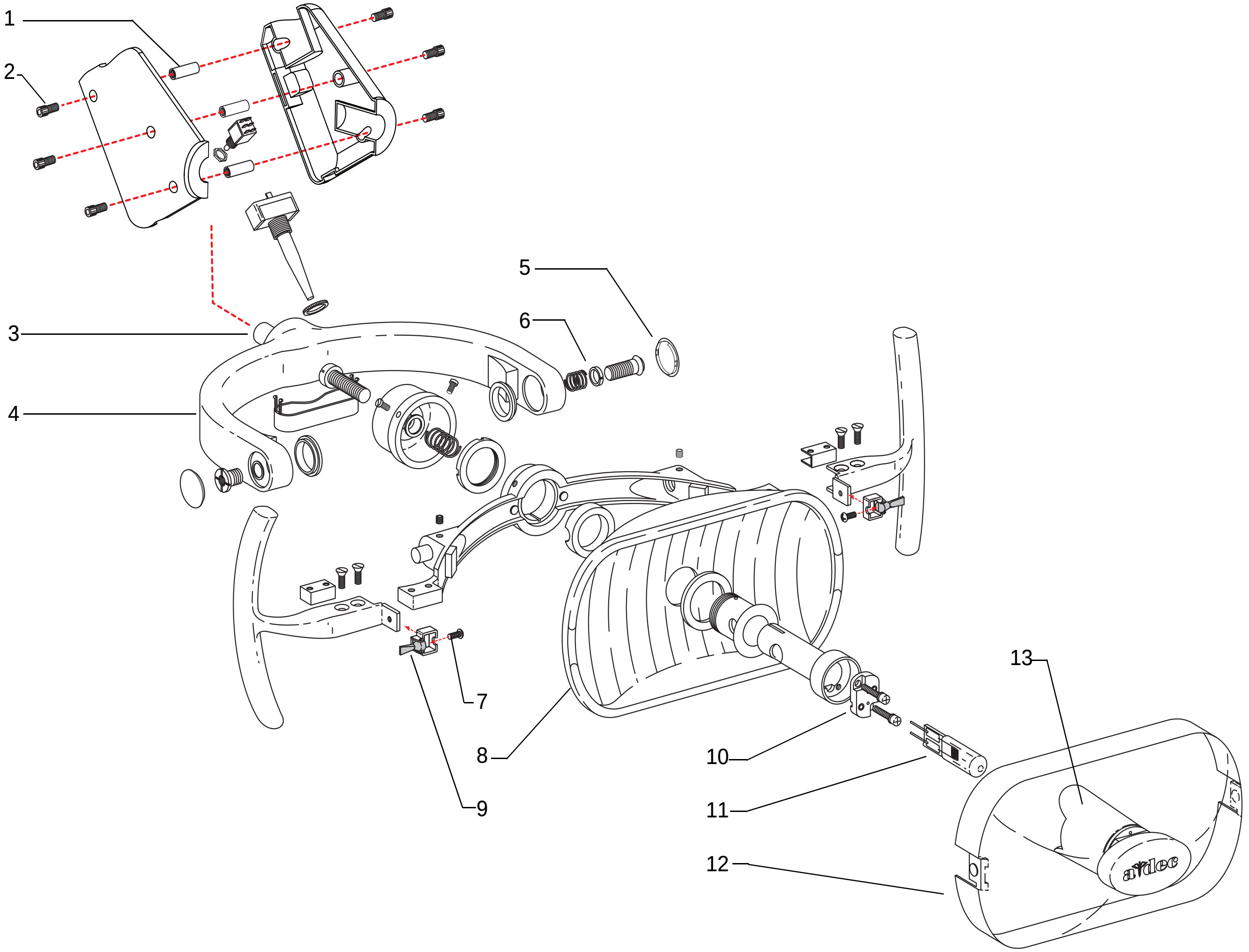
- **Light Head, page 348**
- **571 Dental Light, page 350**
- **6300 Track Dental Light, page 352**
- **Trolley Assembly , page 354**
- **6300 Ceiling Mount Dental Light (Upper), page 356**
- **6300 Ceiling Mount Dental Light (Lower), page 358**
- **6300 Preference Mount Dental Light, page 360**
- **6300 Wall Mount Dental Light, page 363**

Light Head

Part No: 28.1007.00

Item	Part Number	Description
1	28.1467.00	Stand-off
2	002.135.00	Screw, socket head 10-32 x 1/2" stainless steel
3	28.1001.00	Bushing, pivot, light yoke
4	28.1009.00	Light yoke
5	28.1536.00	Plug, light yoke
6	28.1008.00	Spacer, light yoke
7	002.140.00	Screw, button head socket patch, 6-32 stainless steel
8	28.1429.00	Dental light
9	28.1012.00	Toggle bracket assembly, package of 2
10	90.0463.01	Lamp socket kit
11	041.179.01	Lamp
12	28.0503.02	Lens, dental light (includes nosepiece)
13	28.0555.00	Lamp shield with M3 x 8 screws

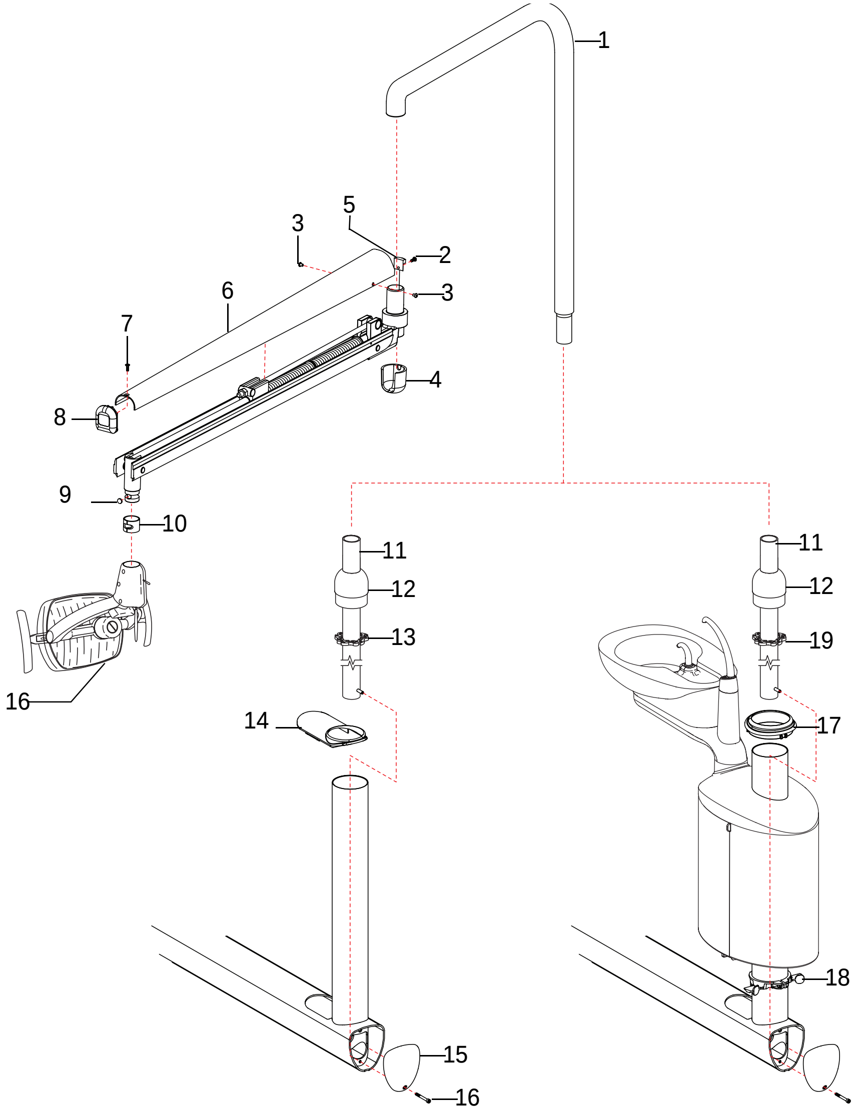
Figure 229 **Light Head Assembly**


1
2
3
4
5
6
7
8
9
10
11
12
13
a-dec

571 Dental Light

Item	Part Number	Description
1	28.0486.00	Light post
2	001.167.00	Screw, button head 6-32 x 3/8
3	002.103.00	Screw, button head socket 6-32 x 3/16
4	28.1531.00	Knuckle cover
5	28.1500.00	Retainer, light arm
6	28.1059.00	Flex arm cover
7	003.099.00	Screw, flat head 6-19 x 1/2"
8	75.0008.00	Cap, light arm
9	28.0679.01	Pivot stop, package of 5
10	28.1003.00	Swivel bushing
11	28.1535.00	Light post, lower
12	28.1509.00	Support, light post
13	28.1574.00	Support, light post, internal
14	77.0091.00	Cover, horizontal arm
15	77.0096.00	Cover, end, lower support arm
16	002.124.00	Screw, socket head 10-32 x 1 3/4"
17	77.0095.00	Trim ring
18	77.0232.00	Spacer

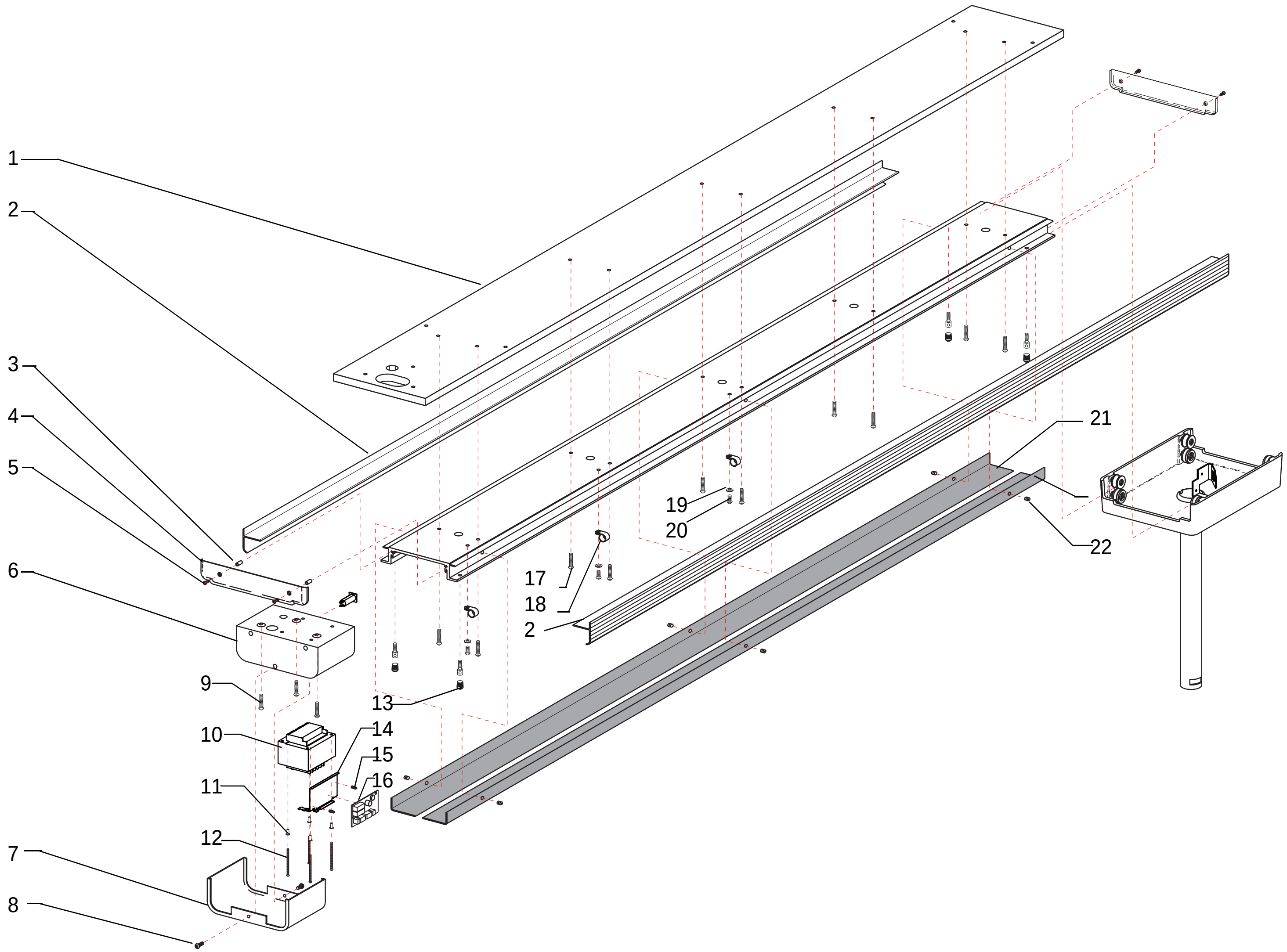
Figure 230 **571 Dental Light**


1
5
3
2
3
6
7
4
8
9
10
11
12
13
11
12
19
16
14
17
18
15
16

6300 Track Dental Light

Item	Part Number	Description
1	28.1571.00†	Pallet assembly, ceiling track mount
2	28.1083.00	Trim cover, outside
3	28.0793.00	Spacer, .198 ID x .437 OD x .4" long
4	28.1077.00	Endcap
5	003.047.00	Screw, pan head Phillips, metal, #10 x 3/4"
6	28.1570.00†	Housing, transformer
7	28.1568.00	Cover, transformer
8	002.103.00	Screw, button head socket, 6-32 x 3/16" stainless steel
9	005.002.02	Screw, button head 1/4-20 x 5/8"
10	28.1588.00	Transformer
11	004.232.00	Washer, shoulder
12	005.156.00	Screw, pan head Phillips, 8-32 x 2-3/4" stainless steel
13	028.008.00	Plug/cap, 1/2" OD x 1/4" ID
14	43.0080.00	Bracket, circuit board lights (includes 28.1577.00)
15	041.691.00	Stand-off
16	28.1577.00	Dental light circuit board
17	005.109.02	Screw, button head 1/4-20 x 1"
18	025.024.00	Cable clamp
19	004.012.00	Washer, flat, steel plated, .156 ID
20	003.014.00	Screw, pan head, Phillips #6
21	28.1084.00	Trim cover, inside track
22	007.003.00	Setscrew, socket cup point 10-32 x 3/16"
23	28.0758.00	Circuit breaker, 10 Amp

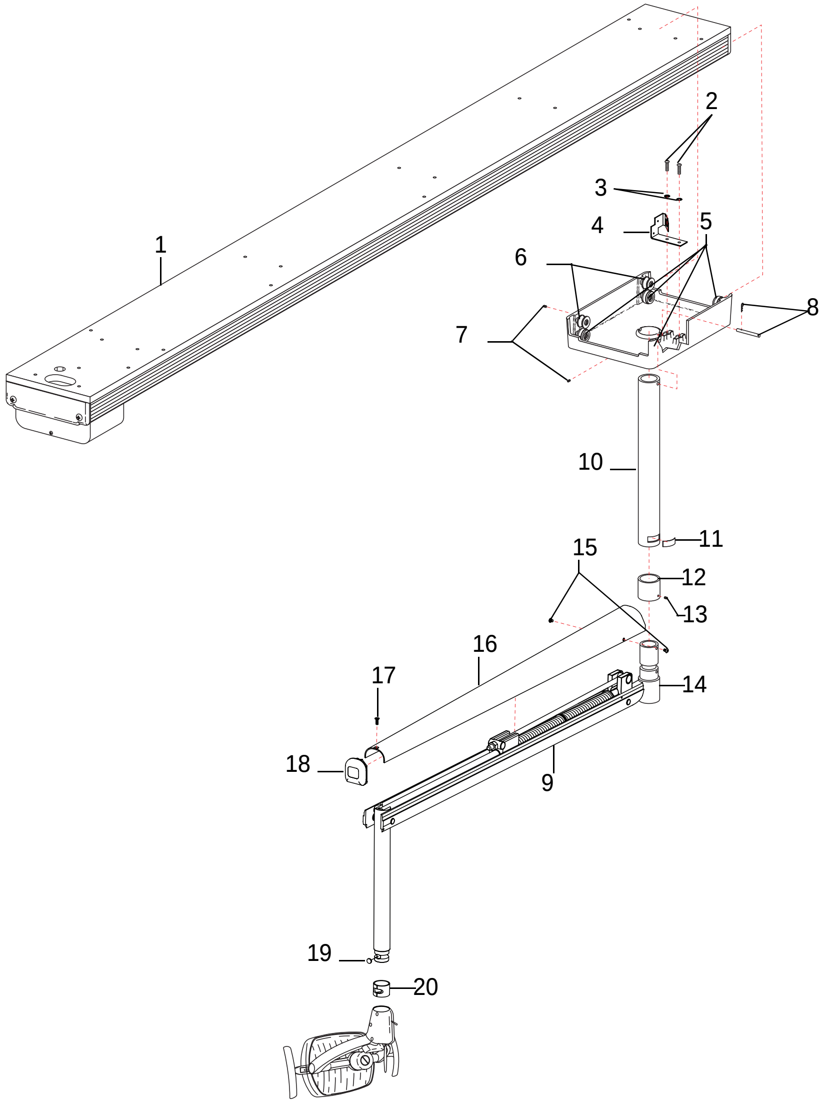
Figure 231 **Track Assembly**


1
2
3
4
5
6
9
10
11
12
7
8
13
14
15
16
17
18
2
19
20
21
22

Trolley Assembly

Item	Part Number	Description
1	28.1079.00	Track Assembly
2	001.004.00	Screw, pan head 10-32 x 3/8"
3	004.040.00	Lock washer
4	28.0667.00	Bracket, electric connector
5	28.0790.00	Crowned wheel assembly
6	28.0789.00	Grooved wheel assembly
7	007.042.00	Setscrew, 1/4-20 x 3/8"
8	99.0733.00	Cross pin kit
9	28.1596.00	Flex arm assembly
10	28.1085.00	15" post
	28.1085.01	21" post
	28.1085.02	27" post
	28.1085.03	33" post
	28.1085.04	39" post
11	28.0566.00	Locking tab
12	28.1092.00	Retaining collar
13	007.002.00	Setscrew, 6-32 x 3/16"
14	28.1572.00†	Mounting hub (must order 28.1596.00 flex arm assembly)
15	002.103.00	Socket head screw 6-32 x 3/16
16	28.1059.00	Flex arm cover
17	003.099.00	Screw, flat head 6-19 x 1/2"
18	75.0008.00	Cap, light arm
19	28.0679.01	Pivot Stop, package of 5
20	28.1003.00	Swivel bushing

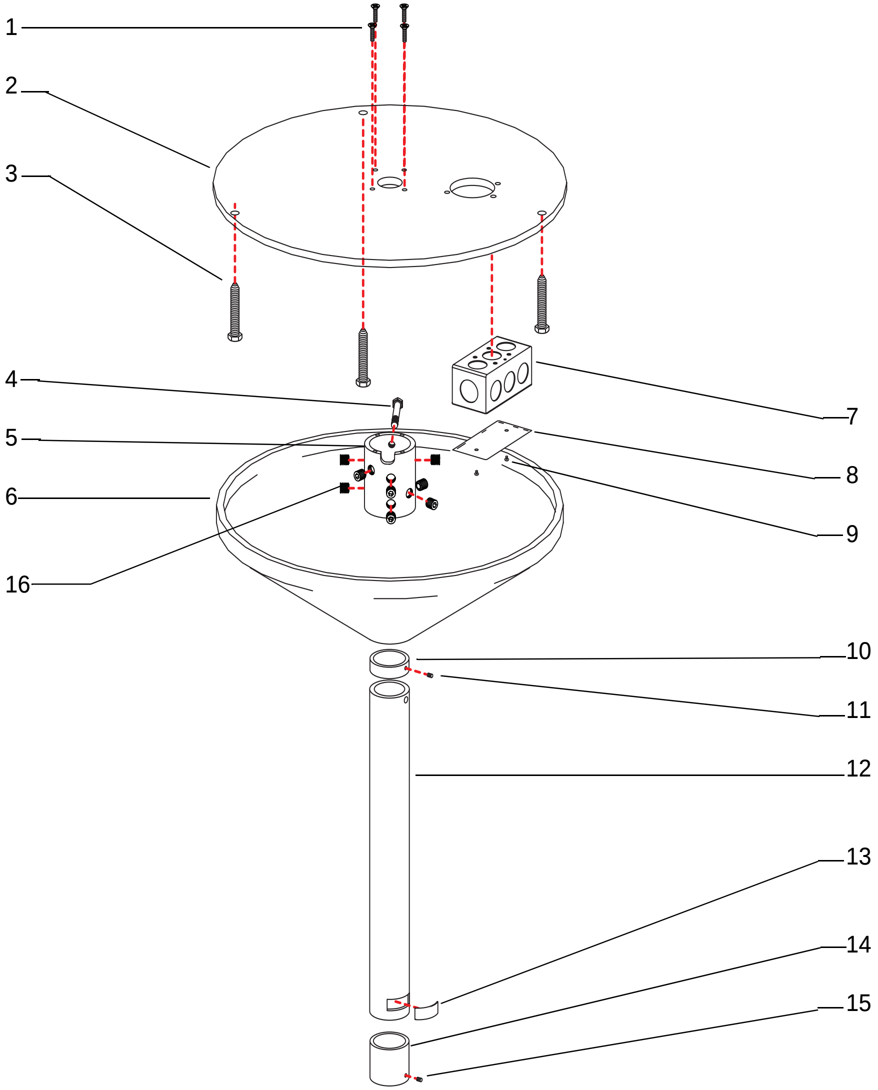
Figure 232 **Trolley Assembly**


1
2
3
4
5
6
7
8
10
11
15
12
13
16
17
14
18
9
19
20

6300 Ceiling Mount Dental Light (Upper)

Item	Part Number	Description
1	002.085.00	Screw, flat head socket 1/4 - 20 x 1/2"
2	28.0573.00	Mounting plate, ceiling
3	003.065.00	Screw hex head 1/4 x 3"
4	001.128.00	Screw, hex head screw 1/4 - 20 x 2 3/4"
5	28.0572.00	Ceiling mount collar
6	28.0571.03	Cover, ceiling mount dental light
7	041.333.00	Junction box 4" x 2-1/8 x 1-1/2
8	041.332.00	Junction box cover
9	002.094.02	Screw, button head socket, 10-32 x 1/4" stainless steel
10	28.0569.02	Stop ring
11	007.071.00	Setscrew, socket, 6-32 x 1/4"
12	28.1052.00	Ceiling mount light post 17"
	28.1052.01	Ceiling mount light post 23"
	28.1052.02	Ceiling mount light post 29"
	28.1052.03	Ceiling mount light post 35"
	28.1052.04	Ceiling mount light post 41"
	28.1052.05	Ceiling mount light post 47"
	28.1052.06	Ceiling mount light post 53"
	28.1052.07	Ceiling mount light post 59"
	28.1052.08	Ceiling mount light post 65"
13	28.0566.00	Locking tab
14	28.1092.00	Collar
15	007.002.00	Setscrew, socket cup point, 6-32 x 3/16"
16	007.005.00	Setscrew, 3/8-16 x 5/16"

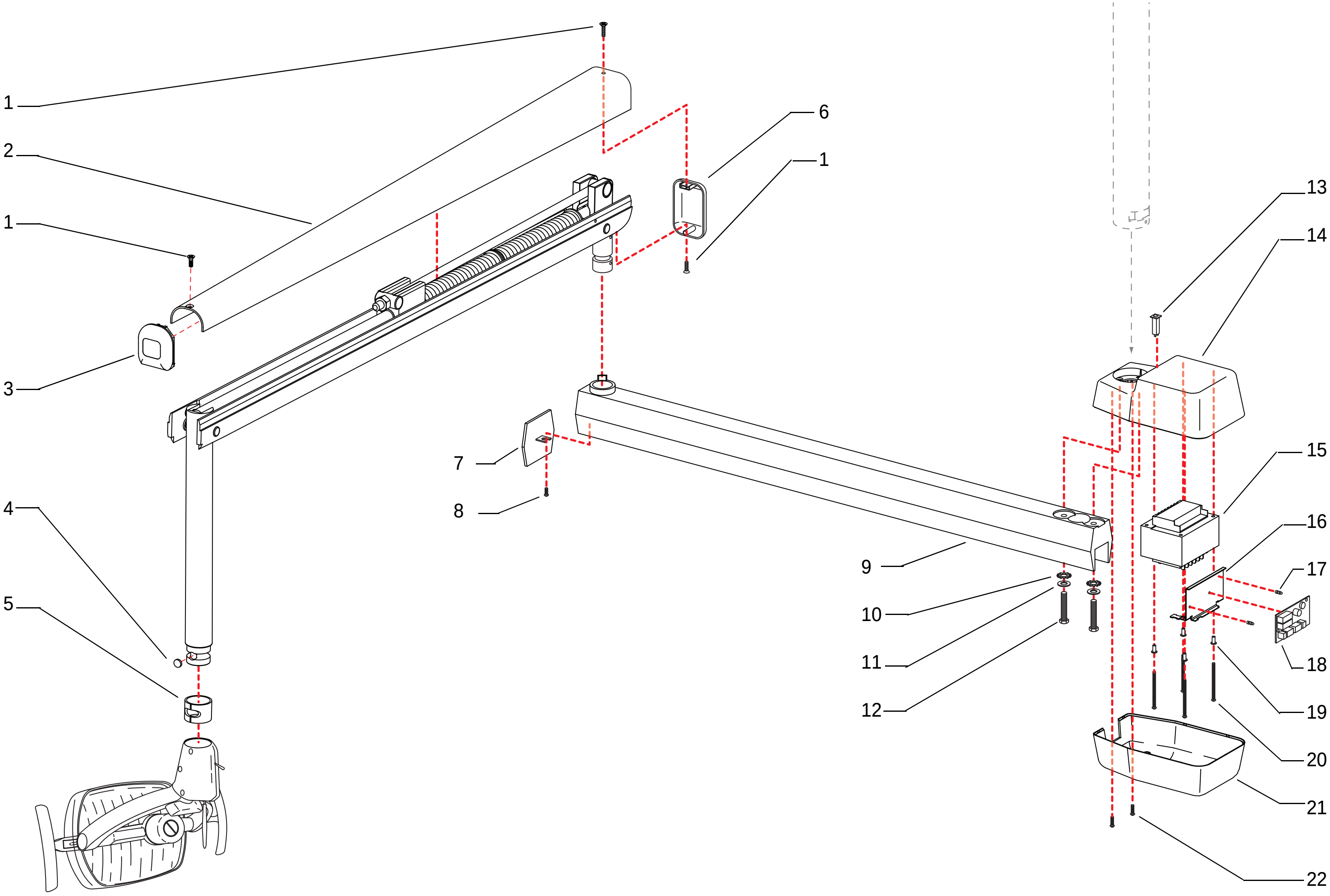
Figure 233 **6300 Ceiling Mount Dental Light (Upper)**


1
2
3
4
5
6
16
7
8
9
10
11
12
13
14
15

6300 Ceiling Mount Dental Light (Lower)

Item	**Part Number**	**Description**
1	003.099.00	Screw, flat head Phillips 6-19 x 1/2"
2	28.1027.00	Cover, light arm
3	75.0008.00	Cap, light arm, front
4	28.0679.01	Pivot stop, package of 5
5	28.1003.00	Bushing, swivel, light switch
6	75.0009.00	Cap, light arm, post end
7	28.1045.00	End cap fixed arm
8	001.073.00	Screw, pan head SEMs Phillips, 6-32 x 1/4"
9	28.0647.02	Rigid arm, dental light
10	004.058.00	Washer, lock, internal/external tooth, 1/4"
11	004.141.00	Washer, flat, steel, .261 ID
12	005.083.00	Screw, hex head, grade 8, 1/4-20 x 2-1/2"
13	28.0758.00	Circuit breaker, 10 Amp
14	28.1552.00†	Housing, base, transformer, cast
15	28.1588.00	Transformer
16	43.0080.00	Bracket, circuit board lights (includes 28.1577.00)
17	041.691.00	Stand-off, circuit board, plastic, 1/4" high, .10"
18	28.1577.00	Dental light circuit board
19	004.232.00	Washer, shoulder, insulating, #8
20	005.156.00	Screw, 8-32 x 2-3/4", pan head Phillips, stainless steel
21	28.1553.00	Housing, cover, transformer, cast
22	005.106.00	Screw, 10-32 x 2-1/2" socket head

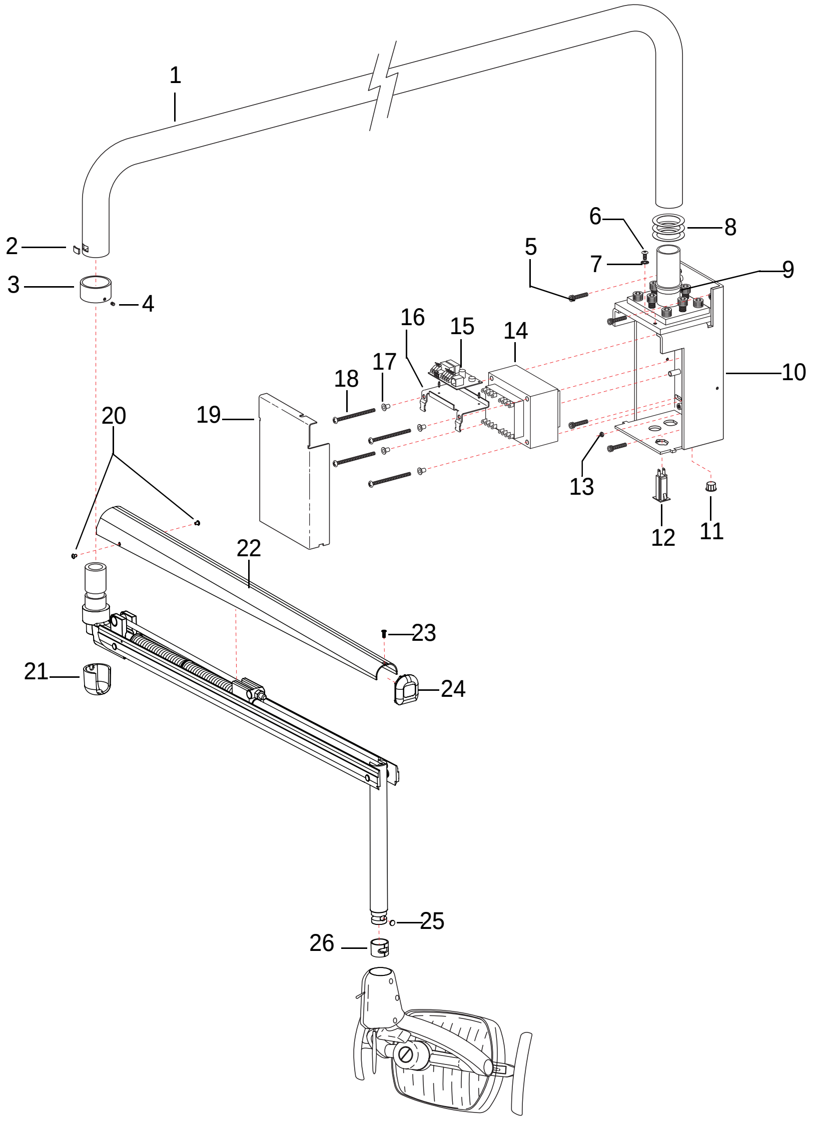
Figure 234 **6300 Ceiling Mount Dental Light (Lower)**


1
2
1
3
4
5
6
1
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

6300 Preference Mount Dental Light

Item	Part Number	Description
1	28.1055.00	Pivot arm, light, wall
2	28.0566.00	Locking tab
3	28.1092.00	Collar, retaining track
4	007.002.01	Setscrew, 6-32 x 3/16, package of 10
5	002.120.00	Socket head screw, 1/4 - 20 x 1"
6	005.012.03	Button head screw 10-32 x 3/8"
7	004.076.00	Washer, flat .155 ID
8	004.071.00	Washer, flat 1.50 ID
9	002.068.00	Screw, socket head 3/8 - 16 x 1"
10	28.1564.00	Mounting bracket
11	018.042.00	Bushing, snap, 5/8" Dia.
12	28.0758.00	Circuit breaker, 10 Amp
13	006.002.00	Nut, hex 10-32 x 3/8 x 1/8"
14	28.1588.00	Transformer
15	28.1577.00	Circuit board dental light relay
16	43.0080.00	Bracket, circuit board lights
17	004.232.00	Washer, shoulder
18	005.156.00	Screw, pan head 8-32 x 2-3/4"
19	28.1566.00	Transformer cover
20	002.103.00	Screw, socket head 6-32 x 3/16"
21	28.1531.00	Knuckle cover
22	28.1059.00	Flex arm cover
23	003.099.00	Screw, flat head 6-19 x 1/2"
24	75.0008.00	Cap, light arm
25	28.0679.01	Pivot Stop, package of 5
26	28.1003.00	Swivel bushing

Figure 235 **6300 Preference Mount Dental Light**

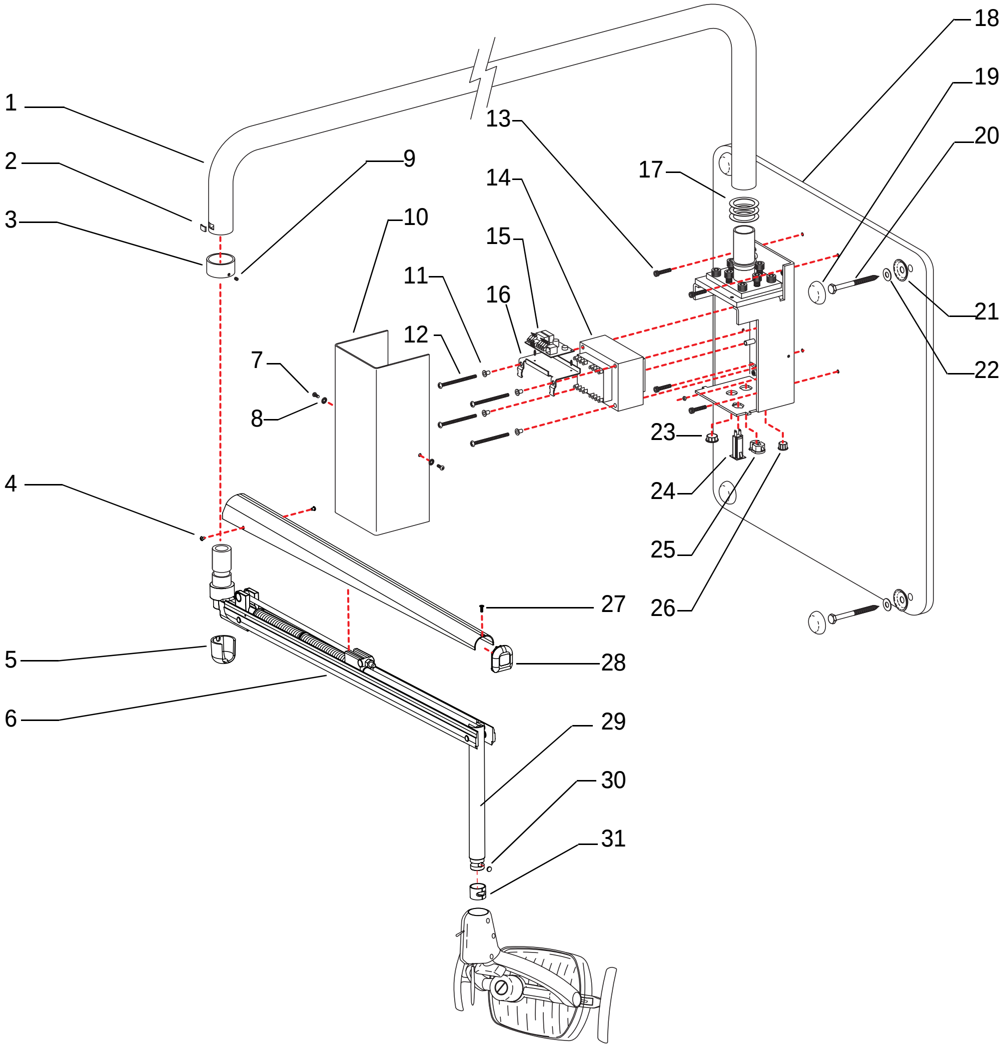

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

6300 Wall Mount Dental Light

Item	Part Number	Description
1	28.1055.00	Pivot arm, light, wall, Preference II
2	28.0566.00	Locking tab
3	28.1092.00	Collar
4	002.103.00	Screw, buttonhead socket, 6-32 x 3/16"
5	28.1531.00	Cover, knuckle
6	28.1598.00	Flexarm assembly, wall, Preference, OTC
7	39.0698.02	Screw, 10-32 x 3/8"
8	004.076.00	Lockwasher, external tooth, #10
9	007.002.00	Setscrew, socket cup point, 6-32 x 3/16"
10	28.1565.00	Cover, transformer
11	004.232.00	Washer, shoulder, insulating, #8
12	005.156.00	Screw, 8-32 x 2-3/4" pan head Phillips, stainless steel
13	005.057.00	Bolt 1/4-20 x 30mm
14	28.1588.00	Transformer, 6300 light, OTC
15	28.1577.00	Dental light circuit board
16	041.691.00	Stand-off, circuit board, plastic, 1/4" high, .10"
17	004.071.00	Washer, flat, nylatron, 1.5 ID
18	28.0877.00	Backboard, dental light, wall
19	028.022.00	Cap, bolt head
20	003.065.00	Screw, hex head, lag, 1/4" x 3" zinc
21	004.131.00	Washer, flange, lag bolt cap, .25 ID
22	004.141.00	Washer, flat, steel, .261 ID
23	018.069.00†	Plug, hole, 7/8" diameter
24	28.0758.00	Circuit breaker, 10 Amp
25	018.047.00	Bushing, strain relief, .325 - .36" diameter, .125

Item	Part Number	Description
26	018.042.00	Bushing, snap, 5/8" diameter, black
27	003.099.00	Screw, flat head Phillips, 6-19 x 1/2"
28	75.0008.00	Cap, light arm, front
29	28.1064.00	Knuckle, 12", dental light end
30	28.0679.01	Slug, pivot stop, dental light, package of 5
31	28.1003.00	Bushing, swivel, light switch

Figure 236 **Wall Mount Assembly**


1
2
3
9
10
13
14
15
16
17
18
19
20
11
12
7
8
21
22
23
24
25
26
4
27
28
5
6
29
30
31

10

CLINICAL PRODUCTS

The A-dec 500 delivery system was designed as a platform for integrating accessory devices like the electric micromotor, intraoral camera, scaler and curing light. Each accessory has a place on the delivery system structural platform and communicates with the data communication system. A-dec and the accessory manufacturers jointly engineered these products for reliability, serviceability and ease of installation.

CLINICAL PRODUCTS CONTENTS

- **EA-50LT and EA-51LT Electric Micromotor, page 368**
- **A-dec Intraoral Camera, page 374**
- **Sopro Intraoral Camera (717 & 595), page 376**
- **SP Newtron Scaler, page 378**
- **MiniLED Curing Light, page 382**

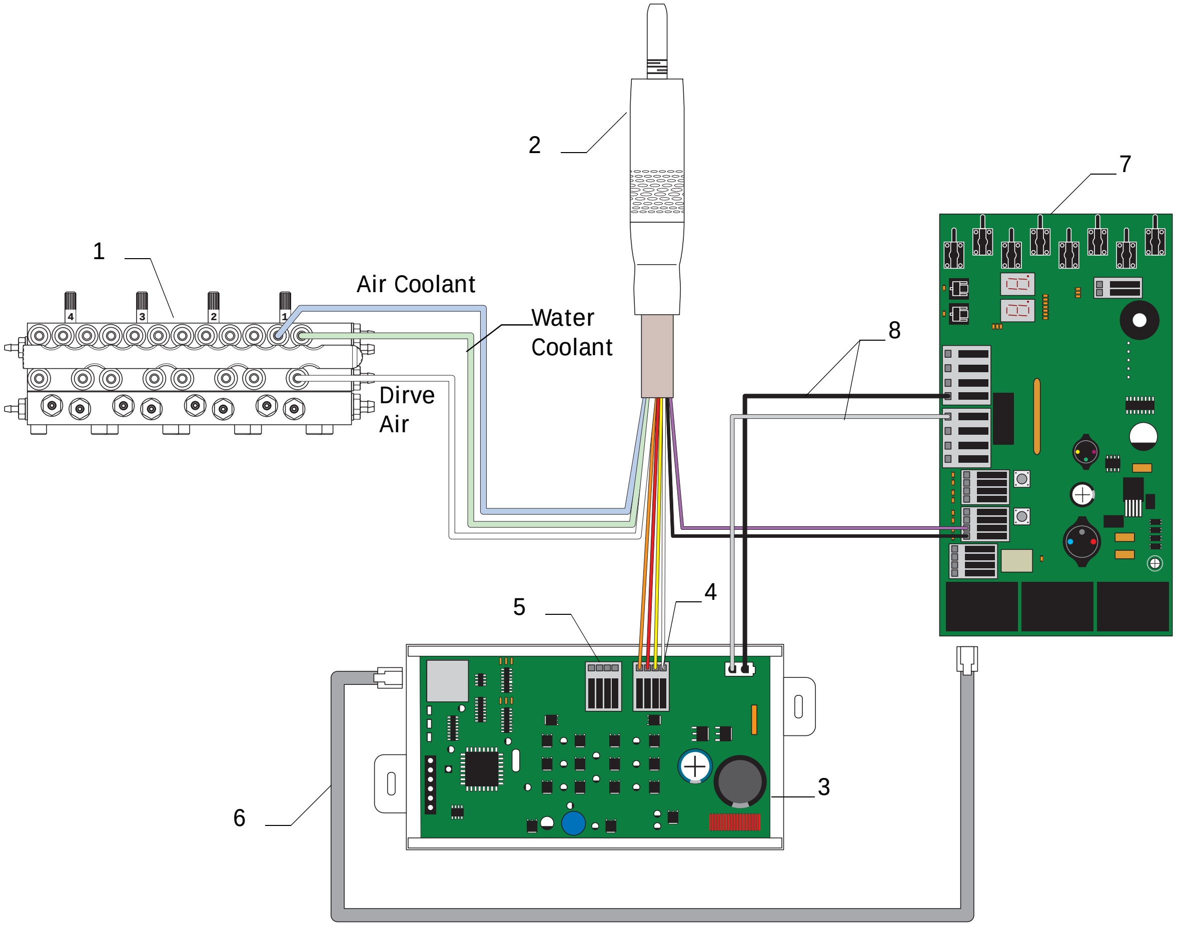
EA-50LT AND EA-51LT ELECTRIC MICROMOTOR

FLOW DIAGRAM

The electric micromotor was designed to integrate only with the A-dec 500 delivery system, equipped with a deluxe touchpad. The micromotor control module can operate two micromotors. To program the deluxe touchpad, follow the steps in the programming section. To program a micromotor, indicate if the motor is attached to terminal one or terminal two on the control module.

Item	Description
1	Control block
2	Electric micromotor
3	Micromotor control module
4	Terminal 1
5	Terminal 2
6	Data line
7	Delivery system circuit board
8	Micromotor controller power cable

Figure 237 **Electric Micromotor Plumbing and Wiring Flow Diagram**


2
7
1
Air Coolant
Water
Coolant
8
4
3
2
1
Dirve
Air
5
4
3
6

MAINTENANCE

EA-50LT and EA-51LT O-ring Replacement

Part No: 54.0200.00

Micromotor Tubing Terminal O-ring Replacement

1. Squeeze the O-ring firmly between thumb and forefinger to form a loop (see Figure 238).
2. Slide the O-ring up and off the tubing terminal.
3. Slide on the new O-ring.

Micromotor O-ring Replacement

1. Squeeze an O-ring firmly between thumb and forefinger to form a loop (see Figure 239).
2. Slide the O-ring up and off the micromotor.
3. Slide on a new O-ring and position it in the groove.
4. Change all O-rings at the same time.

Figure 238 **Steps to Remove and Replace the O-ring on the Tubing Terminal**

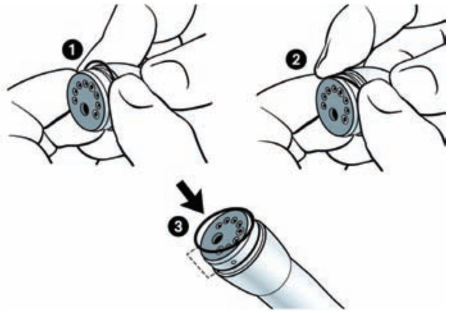
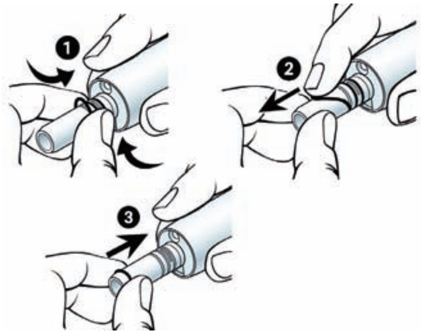


Figure 239 **Steps to Replace the O-rings on the Micromotor**



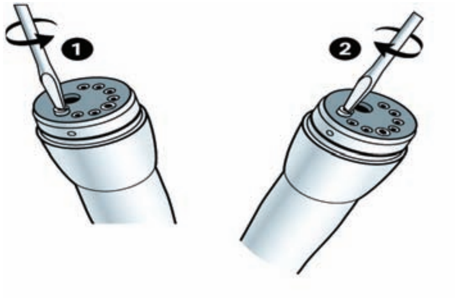
EA-50LT and EA-51LT Bushing Replacement

Part No: 54.0198.00

Micromotor Tubing Insert Bushing Replacement

1. Unscrew and remove the threaded bushing (see Figure 240).
2. Screw the new threaded bushing into the tubing terminal. Don't over tighten.

Figure 240 **Steps to Remove and Replace the Bushing**



EA-50LT Bulb Replacement

Remove Bulb

CAUTION Remove the micromotor from the handpiece tubing to change and dispose of the defective bulb.

---

1. Remove the micromotor sheath by sliding off in the direction indicated (see Figure 241).
2. Remove the locking ring.
3. Position the tweezers between the bulb and the bulb holder.
4. Slide out the bulb.

Replace Bulb

1. Hold the new bulb firmly in the tweezers with the flat side facing the micromotor and the dot facing out (see Figure 242).
2. Insert the bulb into the bulb holder, and push into place with the tweezer's handle.
3. Replace the locking ring and micromotor sheath.

Figure 241 **Steps to Remove the Bulb from the EA-50LT**

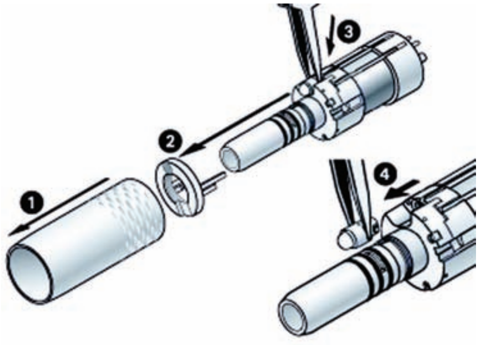
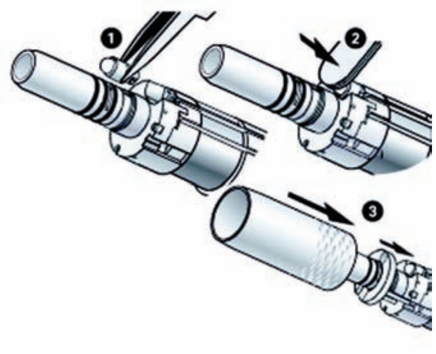


Figure 242 **Steps to Replace the Bulb in the EA-50LT**



EA-51LT Bulb Replacement

Remove Bulb

⚠ **CAUTION** Remove the motor from the handpiece tubing to change the bulb.

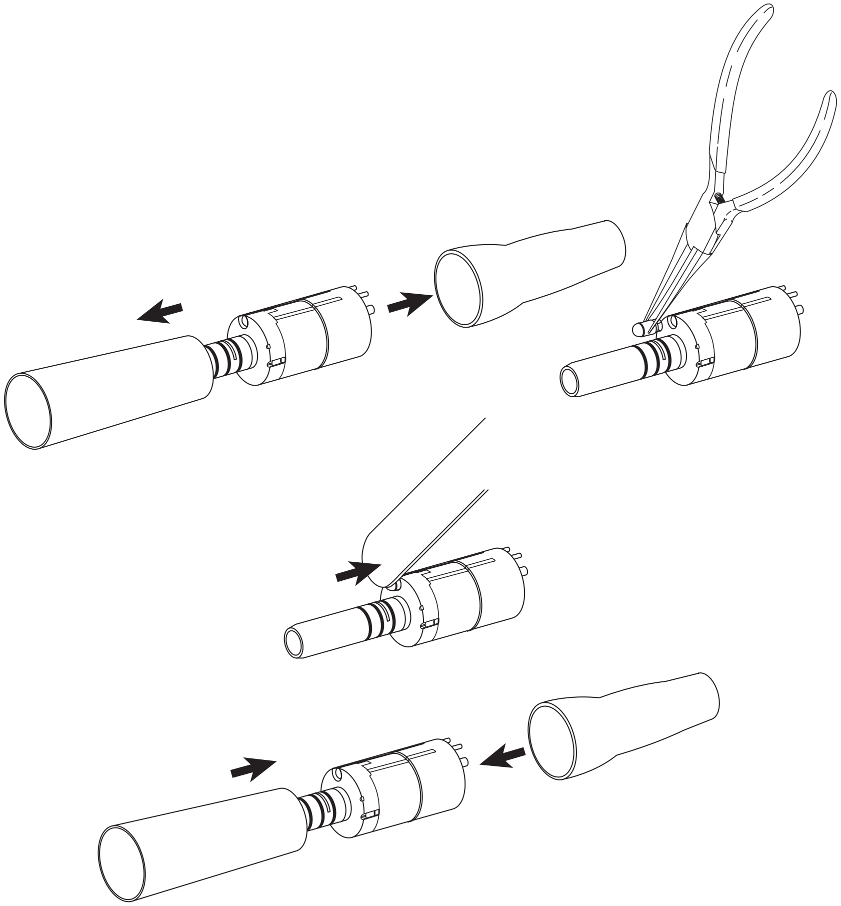
---

1. Remove the motor sheath by sliding off in the direction indicated (see Figure 243).
2. Position the pliers between the bulb and the bulb holder.
3. Slide out the bulb carefully.

Replace Bulb

1. Hold the new bulb firmly in the pliers with the flat side facing the motor and the dot facing out.
2. Insert the bulb into the bulb holder and push into place with the pliers handle.
3. Replace the motor sheath.

Figure 243 **Steps to Remove and Replace the Bulb from the EA-51LT**



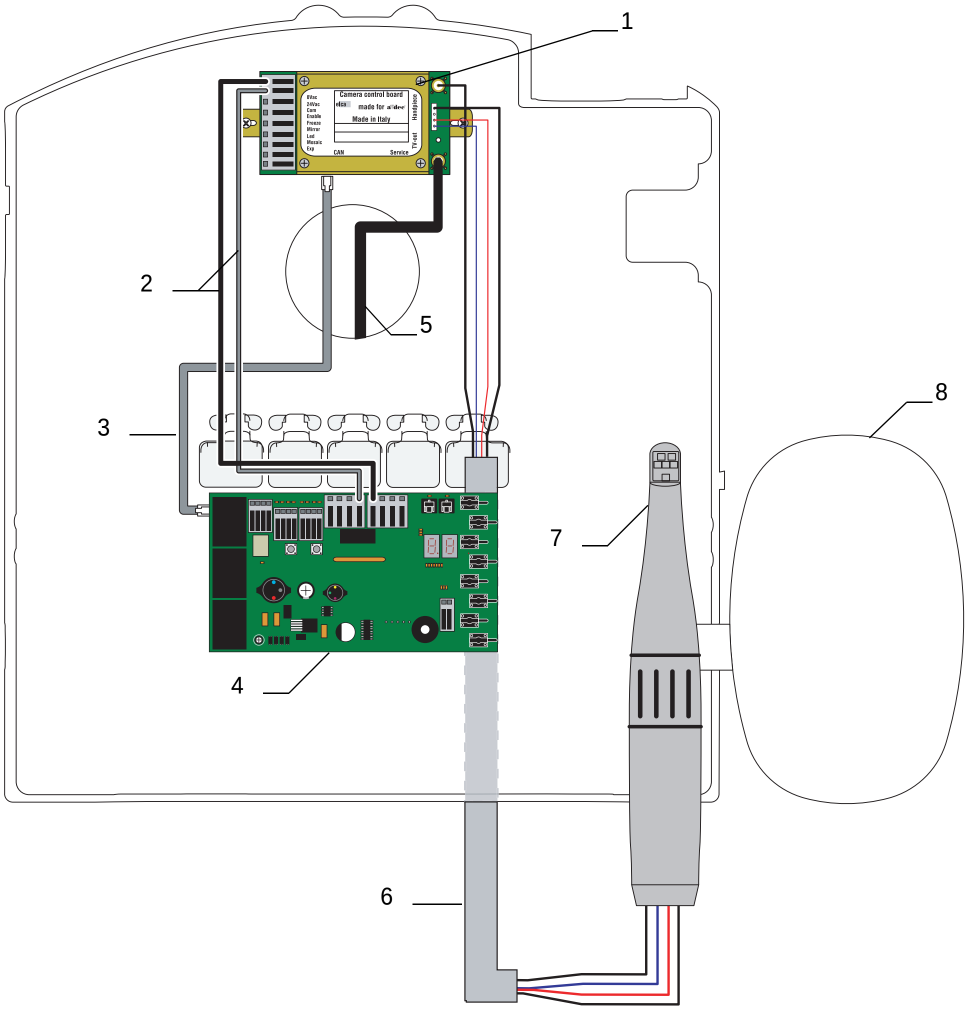
A-DEC INTRAORAL CAMERA (OCTOBER 2003- JANUARY 2007)

FLOW DIAGRAM

The A-dec intraoral camera integrates with the A-dec 500 delivery system. The camera must be located in handpiece Position 1 when used with a standard touchpad. The camera can be used in any of the handpiece positions with a deluxe touchpad. Position 5 can also be used, if an auto-electric accessory holder is installed. The camera must be located in a dry handpiece position.

Item	**Description**
1	Camera control module
2	Power cables
3	Data line
4	Delivery system circuit board
5	Video cable to monitor
6	Handpiece tubing
7	Camera handpiece
8	Touchpad

Figure 244 **Intraoral Camera Plumbing and Wiring Flow Diagram**


1
2
3
4
5
6
7
8
0Vac
24Vac
Com
Enable
Freeze
Mirror
Led
Mosaic
Exp
Camera control board
elca
made for a-dec
Made in Italy
CAN
Service
Handpiece
TV-out

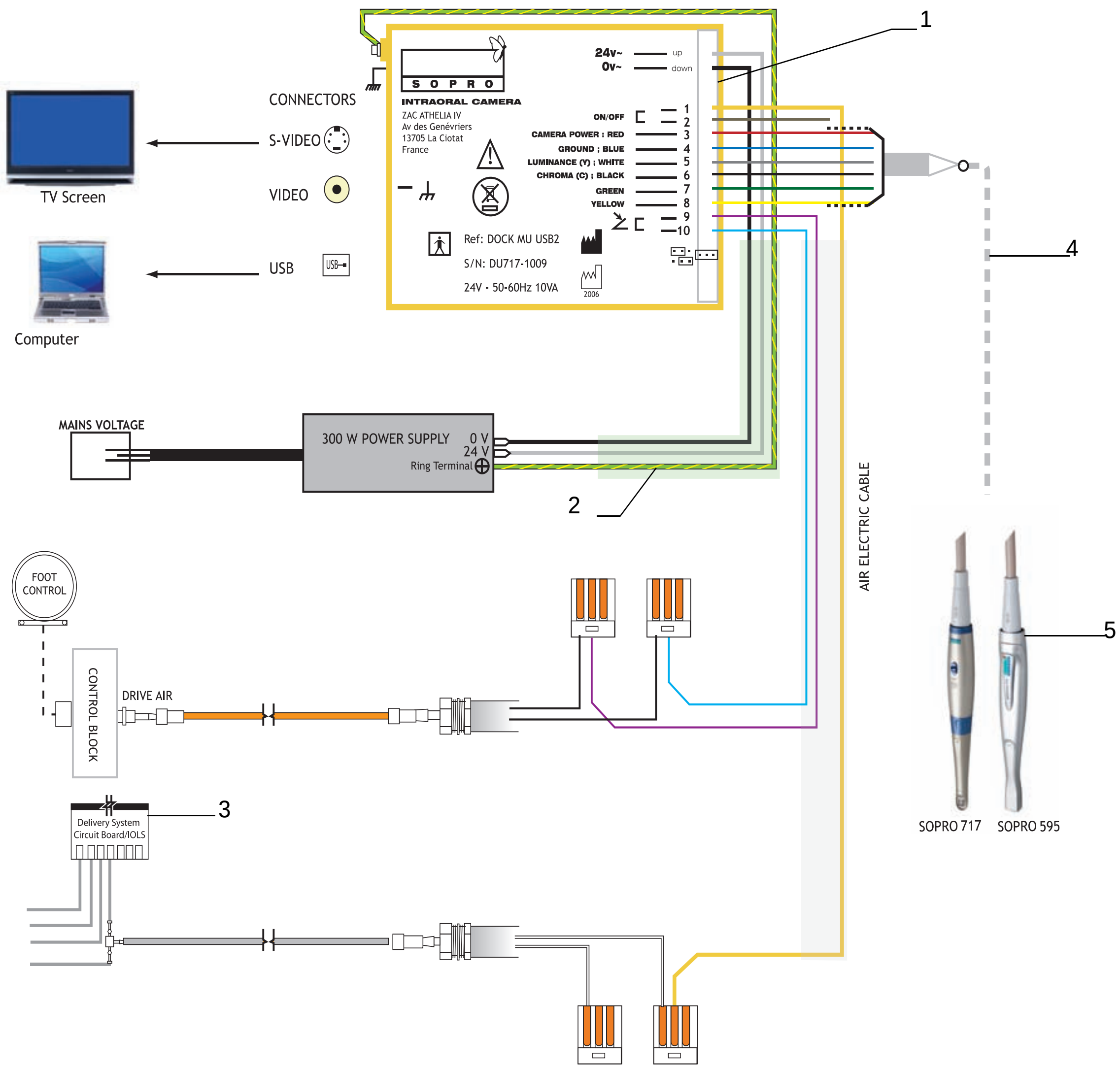
SOPRO INTRAORAL CAMERA (717 & 595)

FLOW DIAGRAM

The Sopro intraoral camera integrates with the A-dec 500 delivery system. The camera must be located in a dry, active handpiece position. The camera can be used with a standard, deluxe or no touchpad.

Item	Description
1	Camera docking station
2	Power wires
3	Delivery system circuit board
4	Handpiece tubing
5	Camera handpiece

Figure 245 Sopro Intraoral Camera (717 & 595) Flow Diagram


1
TV Screen
Computer
CONNECTORS
S-VIDEO
VIDEO
USB
USB
S O P R O
INTRAORAL CAMERA
ZAC ATHELIA IV
Av des Genévriers
13705 La Ciotat
France
Ref: DOCK MU USB2
S/N: DU717-1009
24V - 50-60Hz 10VA
2006
24v~ up
0v~ down
ON/OFF 1 2
CAMERA POWER : RED 3
GROUND ; BLUE 4
LUMINANCE (Y) ; WHITE 5
CHROMA (C) ; BLACK 6
GREEN 7
YELLOW 8
9
10
4
MAINS VOLTAGE
300 W POWER SUPPLY
0 V
24 V
Ring Terminal
2
AIR ELECTRIC CABLE
FOOT CONTROL
CONTROL BLOCK
DRIVE AIR
5
SOPRO 717
SOPRO 595
Delivery System Circuit Board/IOLS
3

SP NEWTRON SCALER

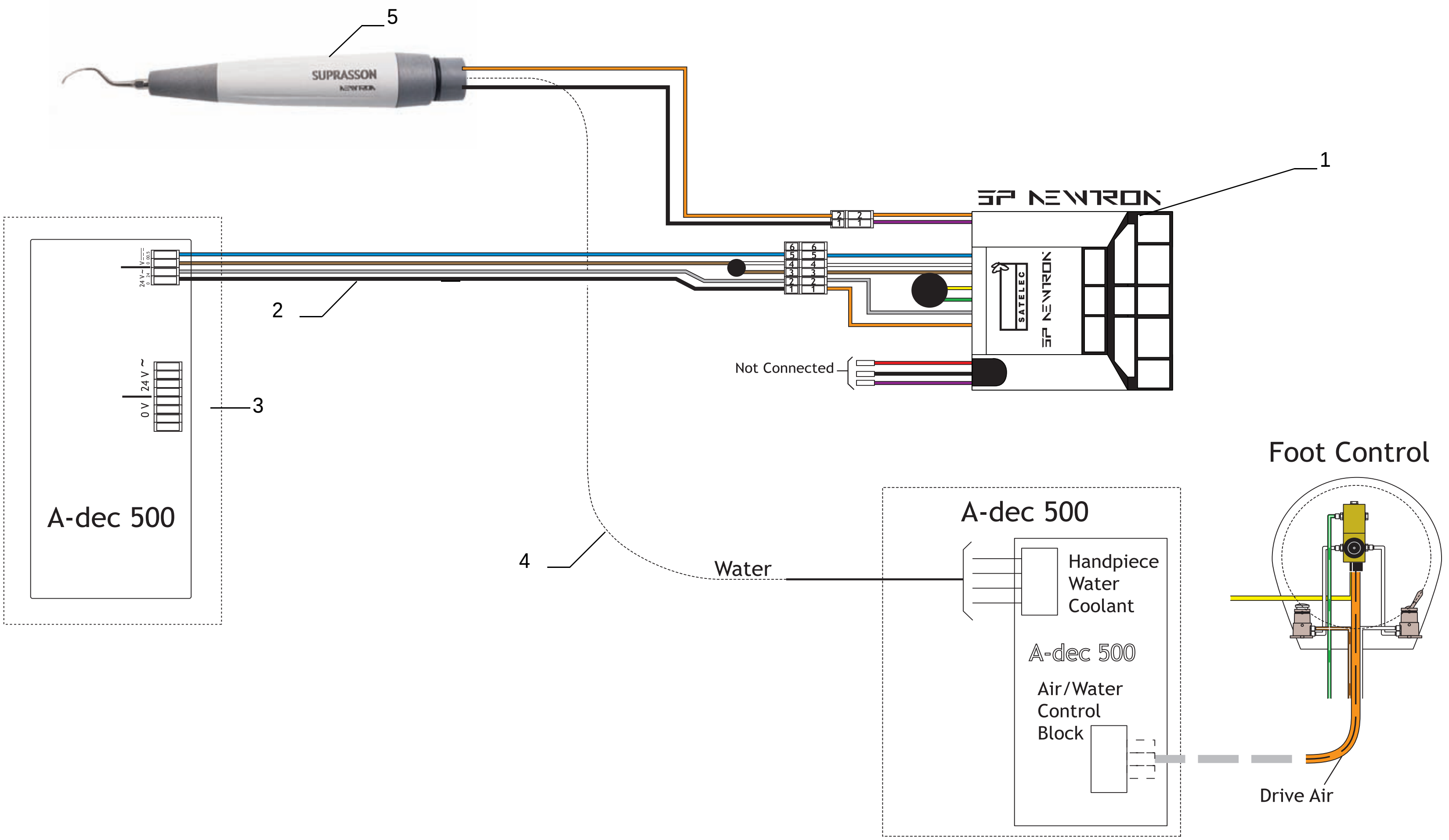
FLOW DIAGRAM

SP Newtron Scaler with Deluxe Touchpad

The SP Newtron scaler integrates with the A-dec 500 delivery system. The scaler must be located in a wet handpiece position.

Item	Description
1	Scaler control module
2	Power cables
3	Delivery system circuit board
4	Water tubing
5	Scaler handpiece

Figure 246 **SP Newtron Scaler with Deluxe Touchpad Flow Diagram**

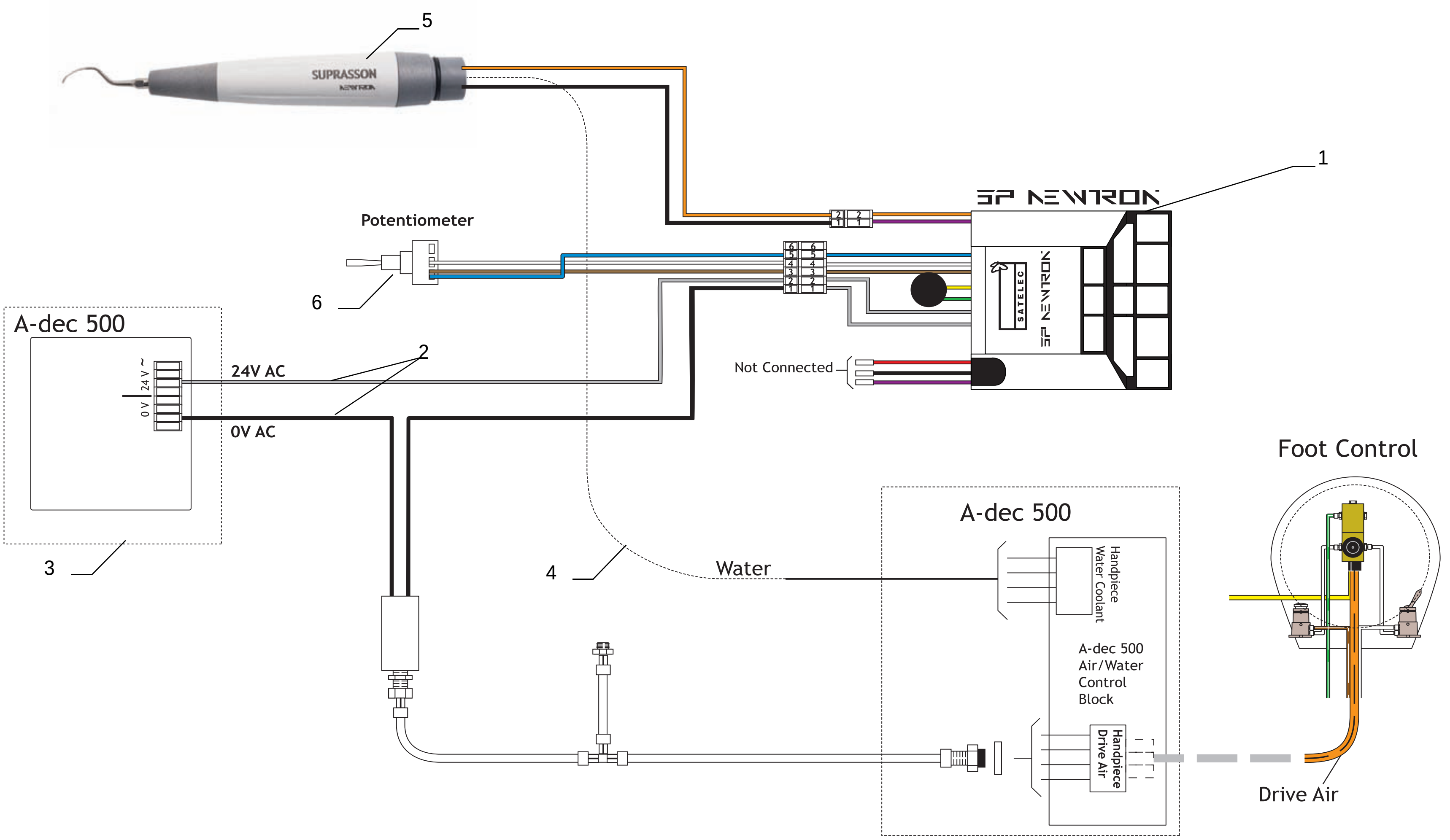

5
SUPRASSON
NEWTRON
1
SP NEWTRON
2
24 V~
0 V
24 V ~
3
A-dec 500
6
5
4
3
2
1
SATELEC
SP NEWTRON
Not Connected
Foot Control
4
Water
A-dec 500
Handpiece
Water
Coolant
A-dec 500
Air/Water
Control
Block
Drive Air

SP Newtron Scaler with Standard or No Touchpad

The SP Newtron scaler integrates with the A-dec 500 delivery system. The scaler must be located in a wet handpiece position.

Item	Description
1	Scaler control module
2	Power cables
3	Delivery system circuit board
4	Water tubing
5	Scaler handpiece
6	Potentiometer

Figure 247 **SP Newtron Scaler with Standard or No Touchpad Flow Diagram**


5
SUPRASSON
NEWTRON
1
SP NEWTRON
SATELEC
SP NEWTRON
Potentiometer
6
6
5
4
3
2
1
2
1
A-dec 500
24 V ~
0 V
24V AC
0V AC
2
3
Not Connected
Foot Control
A-dec 500
Handpiece Water Coolant
A-dec 500 Air/Water Control Block
Handpiece Drive Air
4
Water
Drive Air

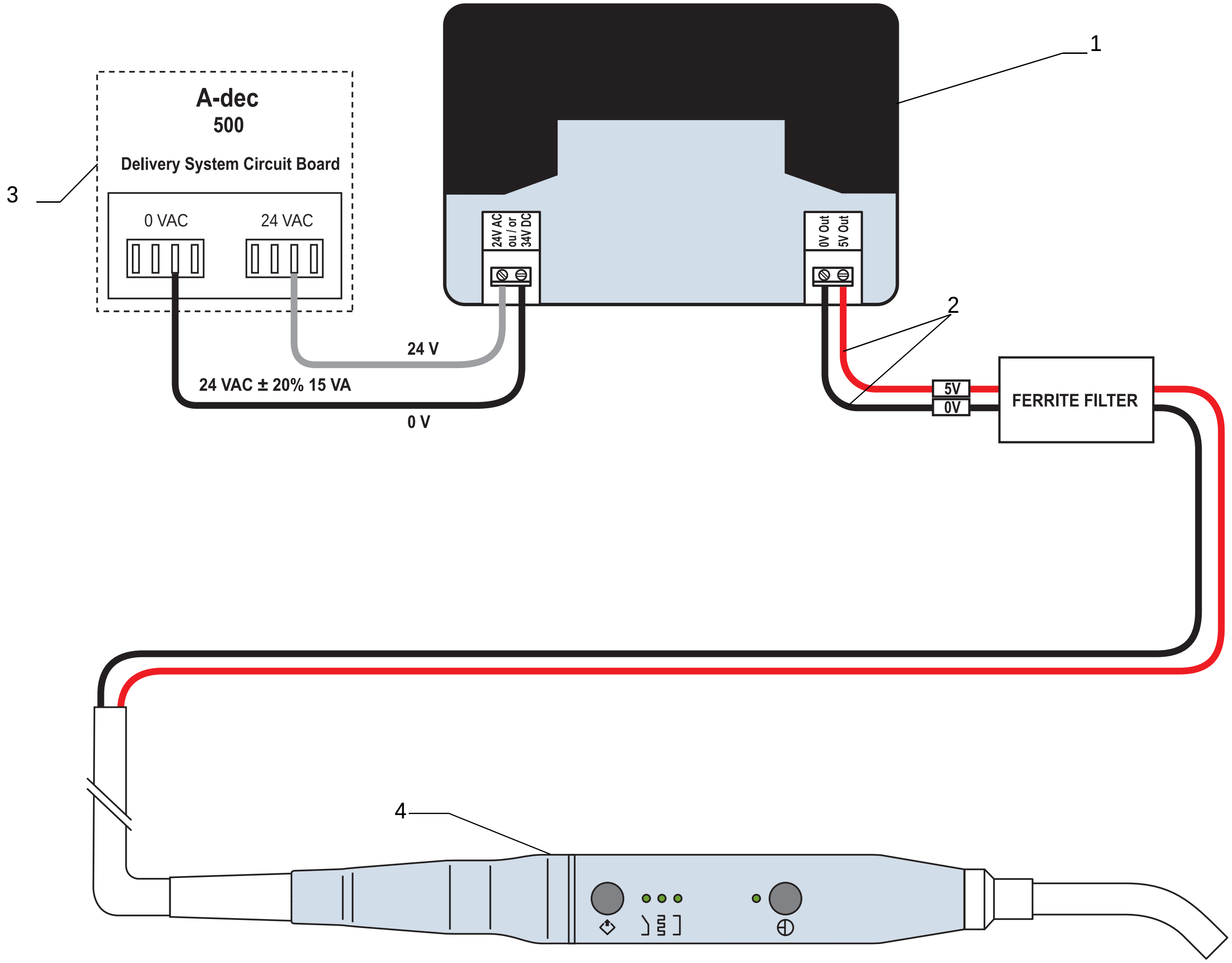
MINILED CURING LIGHT

FLOW DIAGRAM

The MiniLED curing light integrates with the A-dec 500 delivery system.

Item	Description
1	Curing light control module
2	Power cables
3	Delivery system circuit board
4	Curing light handpiece

Figure 248 **MiniLED Curing Light Flow Diagram**


1
A-dec
500
Delivery System Circuit Board
3
0 VAC
24 VAC
24V AC
ou / or
34V DC
0V Out
5V Out
2
24 V
24 VAC ± 20% 15 VA
0 V
5V
0V
FERRITE FILTER
4

11

ICV

This section provides information related to servicing, maintenance and adjustments. For information on service parts, see the *Genuine A-dec Service Parts Catalog* or contact A-dec customer service.

SYSTEMS CONTENTS

- **Product Overview, page 386**
- **Flow Diagram, page 391**
- **Adjustments/Maintenance, page 394**
- **Illustrated Parts Breakdown, page 395**

PRODUCT OVERVIEW

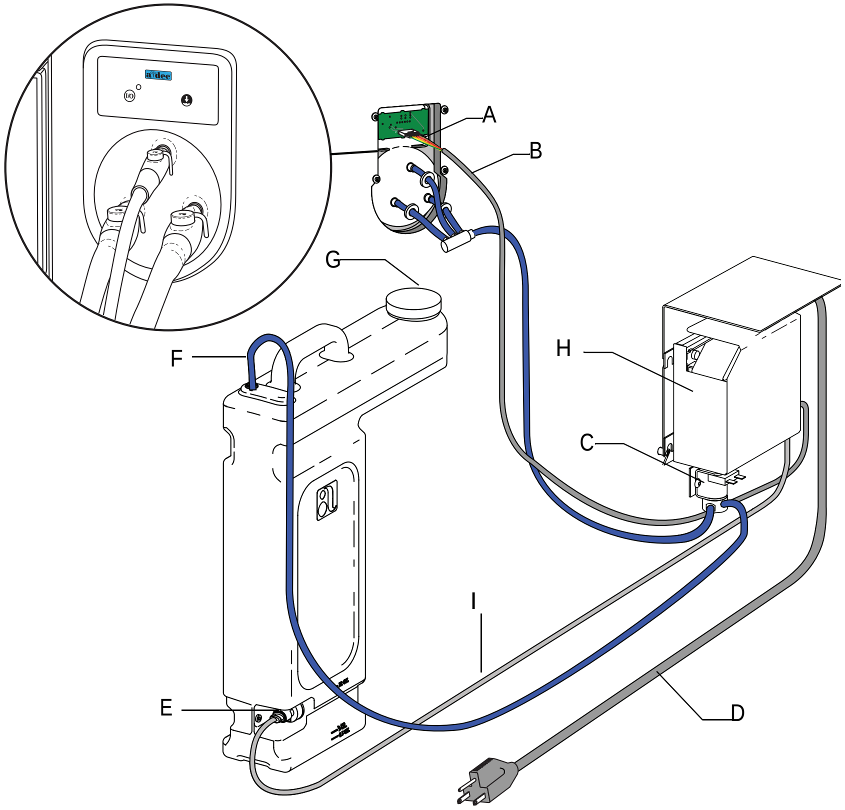
ICV helps to keep the vacuum lines clear of debris, clean and fresh smelling. ICV uses the dental office's vacuum lines. A timer in the system automatically shuts off the flow of the cleaner after one dose (a dose is predetermined from the manufacturer of the cleaner) enters the vacuum system. Bleach and water are not recommended due to the reaction of bleach on the HVE and saliva ejector valve body and o-rings. Contact the vacuum pump manufacturer for recommended cleaning solutions.

Vacuum Requirements

- Wet Vacuum Pump 10+/- 2" of Hg at 9 SCFM
  (34 +/- 7 kpa at 255 sl/min)
- Dry/Semi-dry 4.5+/- 1" of Hg at 12 SCFM
  (16+/- 3.5 kpa at 340 sl/min)

NOTE Standard cubic foot per minute (SCFM). Standard liter per minute (sl/min).

Figure 249 **ICV Components**

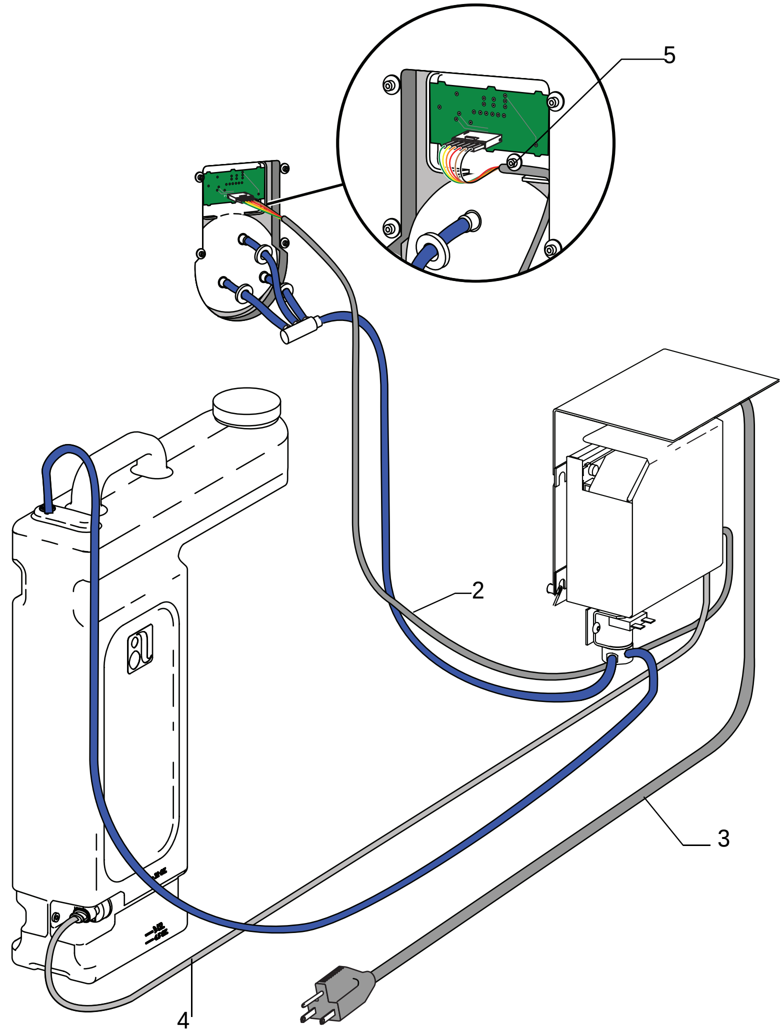


(A) Six Pin Connector; (B) Display Board Cable; (C) Solenoid; (D) Power Cord; (E) Tank Connector; (F) Water Tubing From Control Module; (G) Fill Spout/Cap; (H) Controller Valve; (I) Water Level Sensor Cable

ICV Tubing and Cables

Item	Part Number	Description
1	036.116.00	Tubing, blue, 5/16 **NOTE** Tubing is the same throughout. Cut to length.
2	43.0111.00	Cable assembly, display circuit board 120"
3	43.0108.00	Power cord assembly, 120V
	43.0108.01	Power cord assembly, 220V
4	43.0110.00	Float switch cable assembly
5	001.209.00 and 004.012.00	Used for strain relief

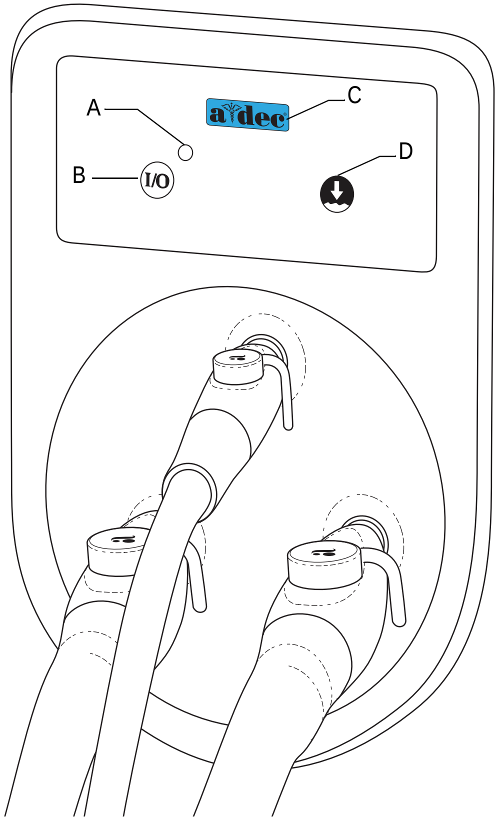
Figure 250 **ICV Tubings and Cables**



ICV Display Panel

The ICV display panel shows the cycle status and fluid level at any given time. The vacuum pump must be on for ICV operation.

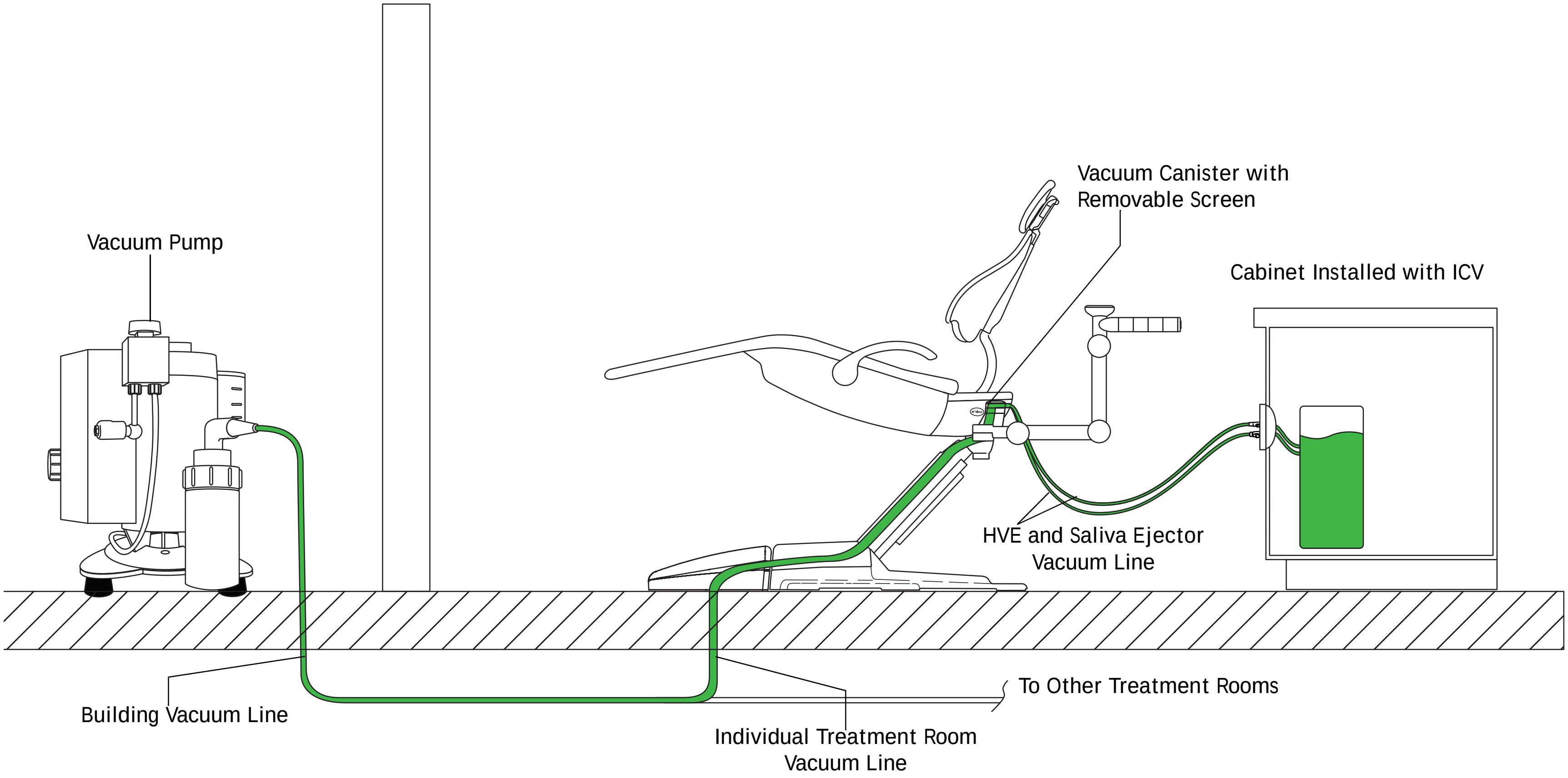
Figure 251 ICV Display Panel



(A) Cycle Indicator; (B) Start/Stop Button; (C) Power Indicator; (D) Low Fluid Indicator

Flow Chart

Figure 252 ICV Flow Chart


Vacuum Pump
Vacuum Canister with Removable Screen
Cabinet Installed with ICV
HVE and Saliva Ejector Vacuum Line
Building Vacuum Line
To Other Treatment Rooms
Individual Treatment Room Vacuum Line

FLOW DIAGRAM

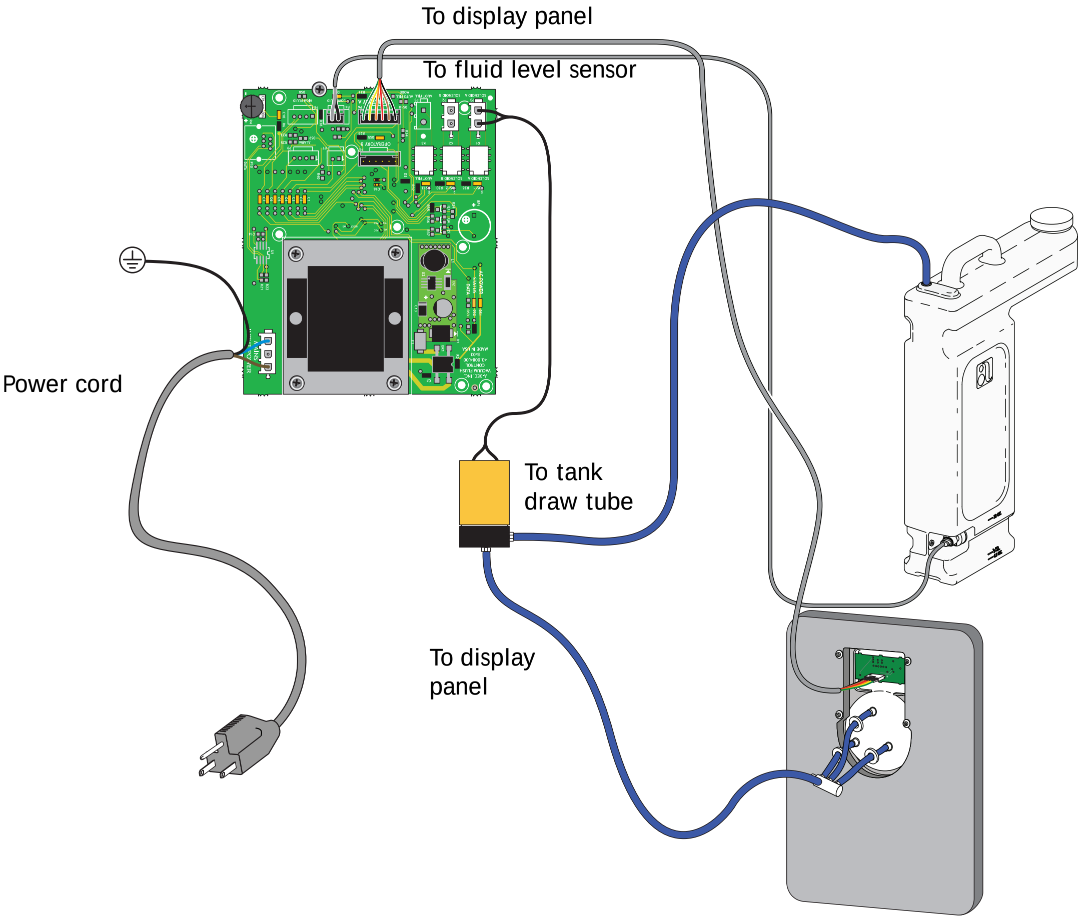

To display panel
To fluid level sensor
Power cord
To tank draw tube
To display panel

Figure 253 **Flow Diagram**

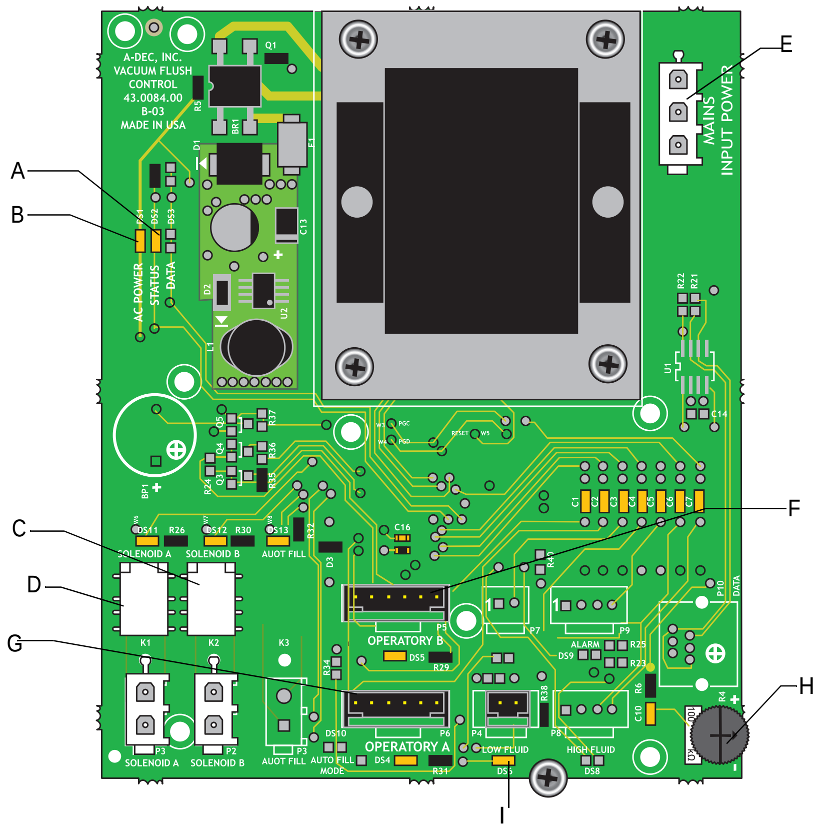
SERVICE/USAGE INFORMATION

ICV Control Circuit Board

Table 14 **ICV Control Circuit Board**

LED	ICV Control Circuit Board
AC Power LED - DS1	Off = No mains voltage, open circuit breaker, P11 not plugged in Green Steady = Mains voltage present
Status LED - DS2	Off = System is not functioning, no power to circuit board, or circuit board has failed Green Steady = Normal condition
Operatory A - DS4	Off = Operatory A is not running Yellow Steady = Operatory A is running
Operatory B - DS5	Off = Operatory B is not running Yellow Steady = Operatory B is running
Low Fluid - DS6	Off = The fluid switch is closed (reservoir has sufficient fluid) Red Steady = The low fluid switch is unplugged or open. (reservoir low on fluid)
Solenoid A - DS11	Off = Operatory A solenoid is off Yellow Steady = Operatory A solenoid is on
Solenoid B - DS12	Off = Operatory B solenoid is off Yellow Steady = Operatory B solenoid is on

Figure 254 **ICV Control Circuit Board**


A
B
C
D
G
E
F
H
I
A-DEC, INC. VACUUM FLUSH CONTROL 43.0084.00 B-03 MADE IN USA
AC POWER
STATUS
DATA
MAINS INPUT POWER
SOLENOID A
SOLENOID B
AUOT FILL
OPERATORY B
OPERATORY A
ALARM
LOW FLUID
HIGH FLUID
AUTO FILL MODE

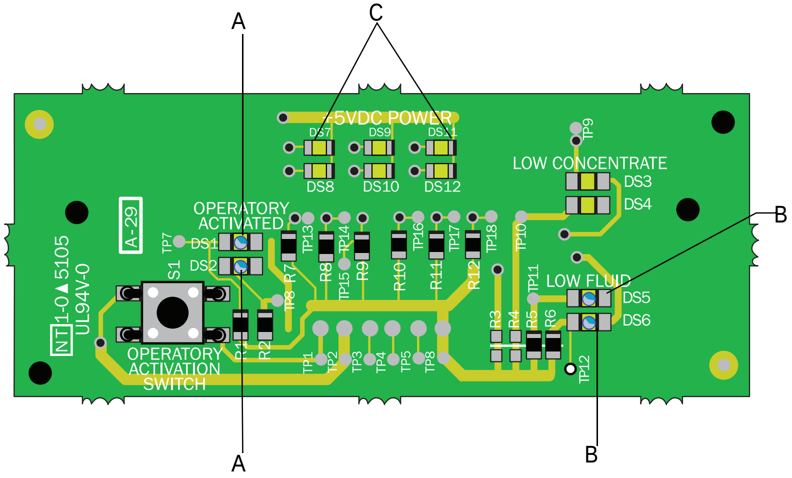
(A) Status - DS2; (B) AC Power - DS1; (C) Solenoid B -DS12; (D) Solenoid A -DS11; (E) Mains Input Power; (F) Operatory B - DS5; (G) Operatory A - DS4; (H) Timing Wheel; (I) Low Fluid - DS6

ICV Display Circuit Board

Table 15 ICV Display Circuit Board

LED	ICV Display Circuit Board
Cycle - DS1 and DS2	Off = Solenoid is closed Yellow Steady = Solenoid is open
Low fluid - DS5 and DS6	Off = The low fluid switch is closed; reservoir has sufficient fluid Red Steady = The low fluid switch is unplugged or open (reservoir low on fluid)
Power - DS7 - DS12	Off = ICV control board is off, P1 disconnected from display board, respective control connector (P4 or P5) is disconnected Blue Steady = Power is present to display circuit board

Figure 255 ICV Display Circuit Board


A
C
+5VDC POWER
DS7
DS9
DS11
DS8
DS10
DS12
TP9
LOW CONCENTRATE
DS3
DS4
B
A-29
OPERATORY ACTIVATED
TP7
DS1
DS2
S1
NT1-0▲5105
UL94V-0
TP13
TP14
TP15
TP16
TP17
TP18
TP10
R7
TP8
R8
R9
R10
R11
R12
TP11
LOW FLUID
DS5
DS6
OPERATORY ACTIVATION SWITCH
R1
R2
TP1
TP2
TP3
TP4
TP5
TP8
R3
R4
R5
R6
TP12
A
B

(A) Cycle - DS1 and DS2; (B) Low Fluid - DS5 and DS6; (C) Power - DS7 - DS12

ADJUSTMENTS/MAINTENANCE

Cycle Time Test

1. Check the front panel. The A-dec blue logo should be illuminated. The amber low fluid indicator light should be on if the tank is empty, low or disconnected.
2. Test and adjust the cycle time:
    1. Disconnect the tubing and sensor from the tank; remove the tank and fill with three liters of water (three tick marks on the tank).
    2. Reinstall the tank and plug in the tubing and sensor. The low fluid indicator light should turn off.
    3. Place one or more vacuum tubings on the ICV connectors and open the valves.

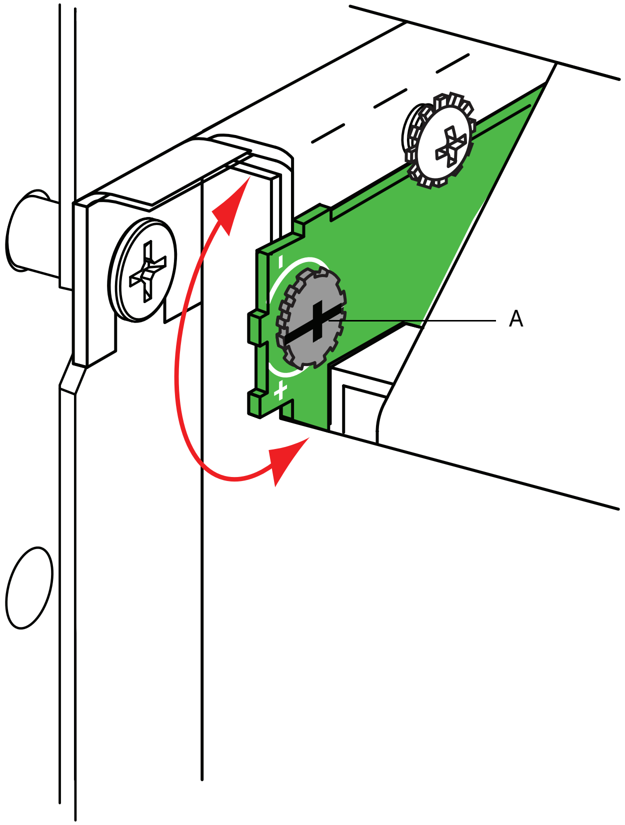
⚠ **CAUTION** Once activated, the normal operation of the ICV requires a minimum of one tubing attached with the valve open.

Press the Start/Stop button and time the length of the cycle.

Cycle Time Adjustment

The time is adjustable from 20 to 150 seconds. Recalibrate the cycle time by adjusting the timing wheel on the control module (see Figure 256). Adjust the time so that one dose of fluid is removed from the tank per cycle. A dose is predetermined from the manufacturer of the cleaner. Retime if necessary.

Figure 256 **Adjust Timing**



(A) Timing Wheel

ILLUSTRATED PARTS BREAKDOWN

This section contains illustrated parts breakdowns specific to ICV.

Part Identification Symbols

The conventions for the serviceable components tables are designed to identify all parts and kits, including ones that are not for sale. Symbols with reference notes are used.

Symbol	Definition
†	Indicates that the individual part is not available for sale (these parts are typically part of a kit and/or larger assembly that is for sale)
No symbol	Part is for sale

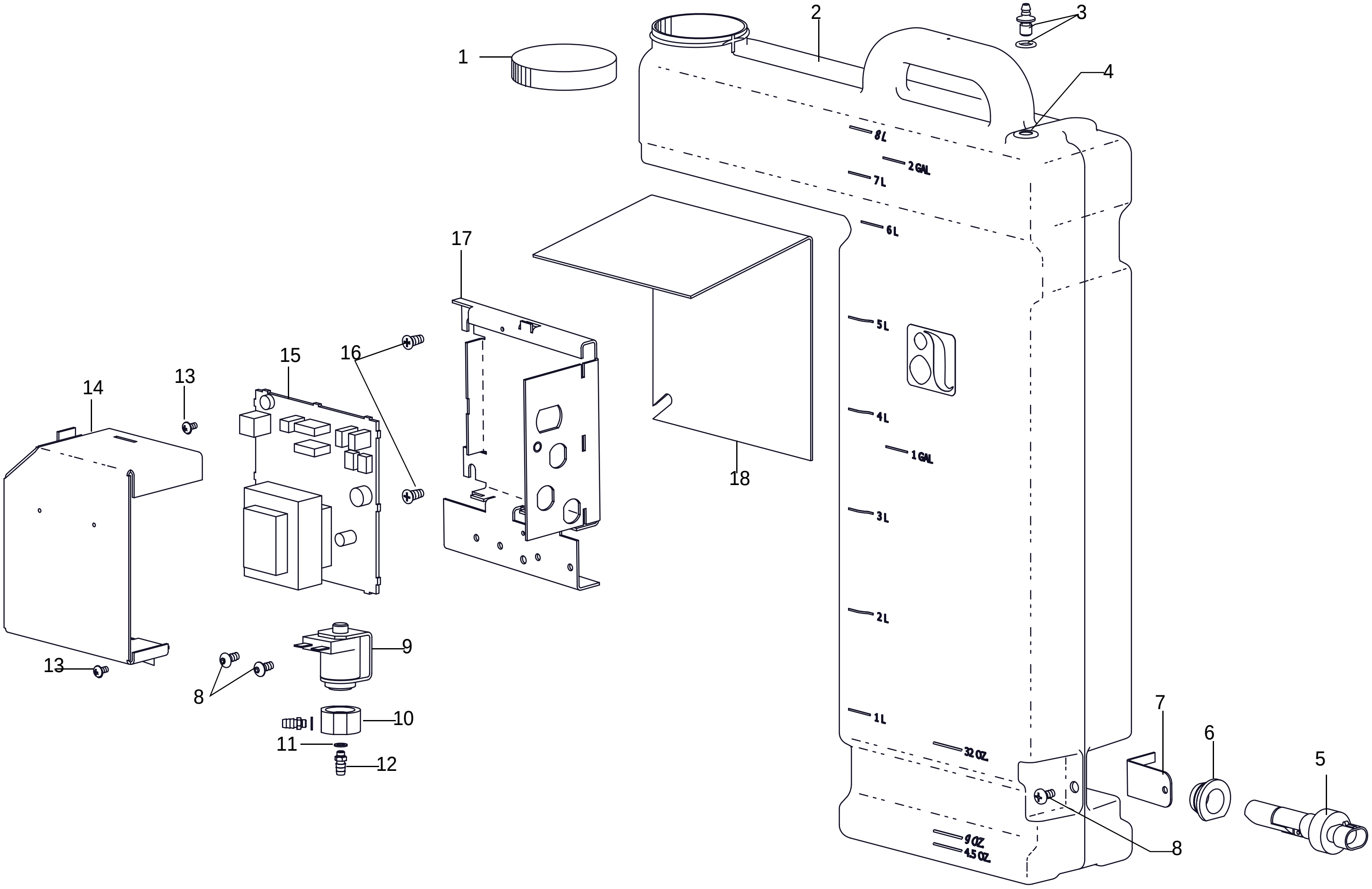
ICV IPB CONTENTS

- **ICV Components, page 396**
- **ICV Display Panel, page 398**
- **ICV Dual Panel, page 400**

ICV Components

Item	Part Number	Description
1	77.0598.00	Cap
2	77.0675.00	Tank assembly
3	77.0594.00	Tank connector without o-ring
4	77.0595.00	Quick-disconnect, female
5	54.0047.00	Sensor, fluid level
6	54.0145.00	Fluid sensor seal
7	77.059700	Bracket, flush tank
8	003.072.00	Screw, 10-32 x 3/8
9	041.660.00	Solenoid with o-ring
10	77.0600.00	Control valve
11	004.005.02	Washer, flat, nylon .187 ID, package of 10
12	023.805.01	Barb, 5/16, 10-32, package of 10
13	001.073.00	Phillips 6-32 x 1/4
14	77.0604.00†	Cover
15	90.1153.00	Control board kit, 110V
	90.1153.01	Control board kit, 220V
16	003.071.00	Screw, Phillips 5mm x 10.5mm
17	77.0605.00†	Bracket, transformer board
18	77.0625.00	Shield
	77.0694.00	Extension kit, 10'

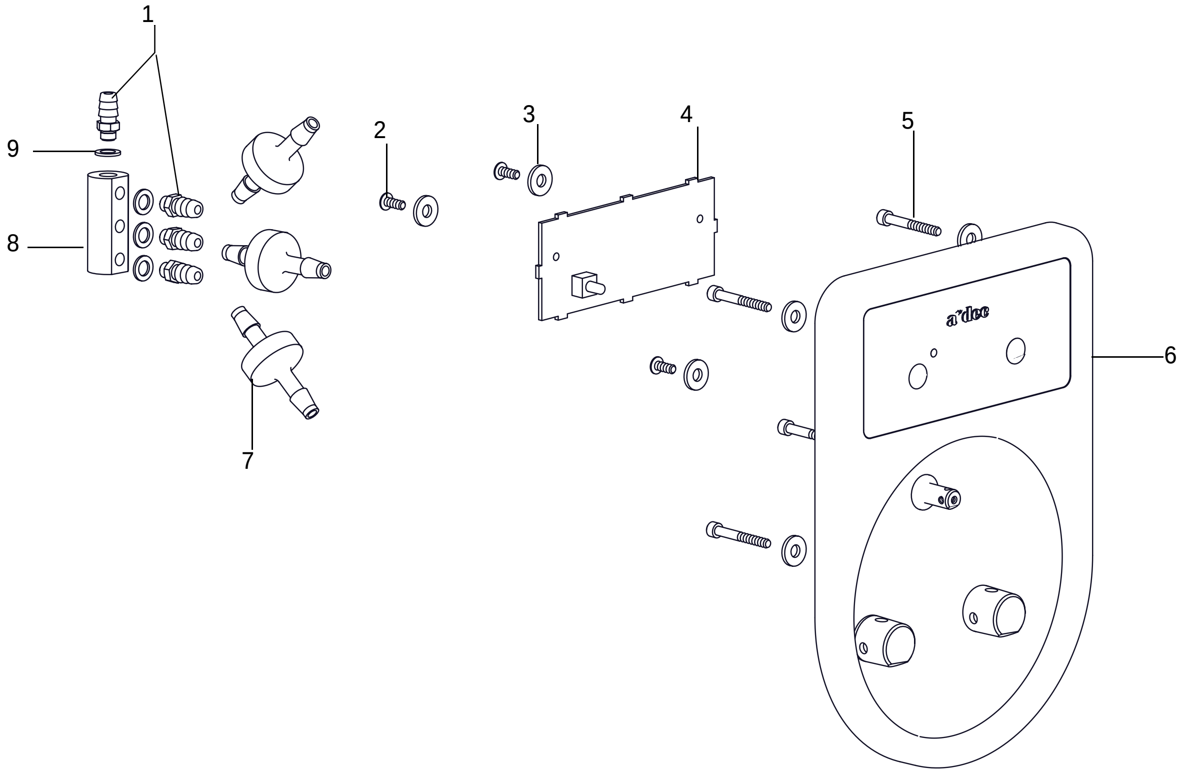
Figure 257 **ICV Illustrated Parts Breakdown**


1
2
3
4
8L
2 GAL
7L
6L
17
5L
15
16
13
14
4L
1 GAL
18
3L
2L
9
13
8
10
11
12
1L
7
6
5
32 OZ
8
9 OZ
4.5 OZ

ICV Display Panel

Item	Part Number	Description
1	023.805.01	Barb, 15/16 x 10-32, package of 10
2	001.209.00	Phillips 4-40 x 3/16
3	004.012.00	Washer, flat stainless .156 ID
4	90.1155.00	Display board kit
5	002.102.00	Screw, socket head 4-40 x 7/8
6	77.0693.00	Front panel without board, 15 mm
	77.0692.00	Front panel without board, 11 mm
7	77.0602.00	Check valve, vacuum flush
8	77.0688.00	Adapter, 3 to 1, vacuum flush
9	004.005.02	Washer, flat, nylon .187 ID, package of 10

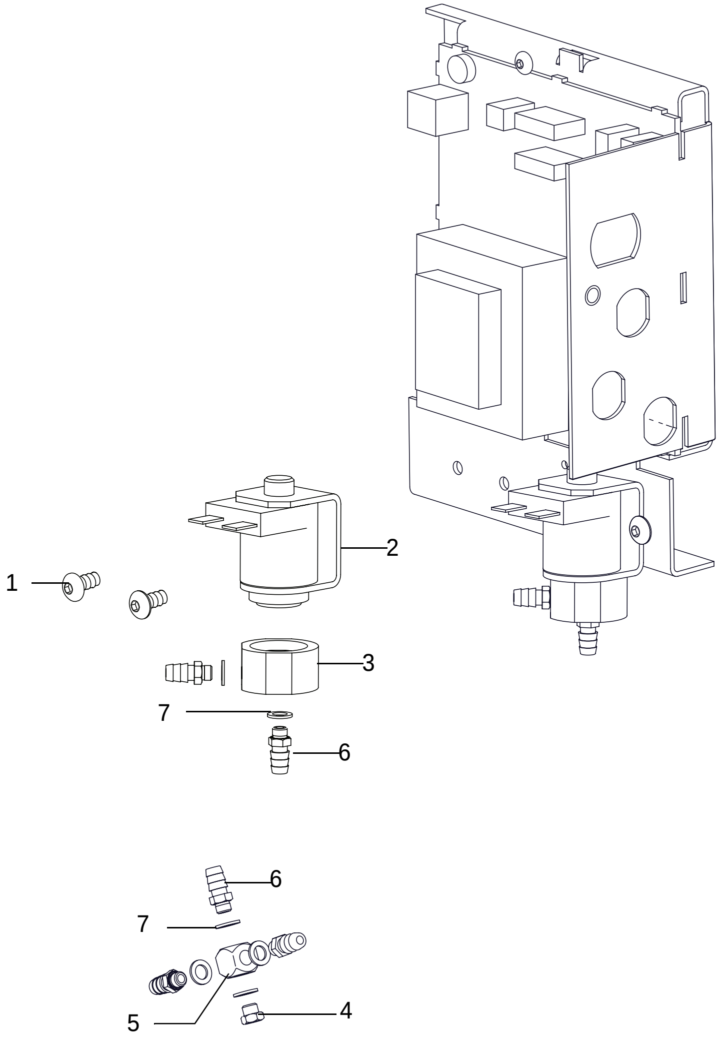
Figure 258 **ICV Display Panel**


1
9
8
2
3
4
5
6
7
a'dec

ICV Dual Panel

Item	Part Number	Description
1	003.072.00	Screw, 10-32 x 3/8
2	041.660.00	Solenoid with o-ring
3	77.0600.00	Control valve
4	021.016.04	Hex plug, 10-32, package of 10
5	021.0270.01	Female cross body, package of 5
6	023.805.01	Barb, 15/16 x 10-32, package of 10
7	004.005.02	Washer, flat, nylon .187 ID, package of 10

Figure 259 **ICV Dual Panel**



12

TROUBLESHOOTING

SYSTEMS CONTENTS

- Introduction, page 404
- Dental Chair, page 405
- Delivery Systems, page 413
- Data Communication System, page 424
- Cuspidor, page 428
- Floor Box, page 435
- Dental Light, page 436
- Clinical Products, page 438
- ICV, page 448

INTRODUCTION

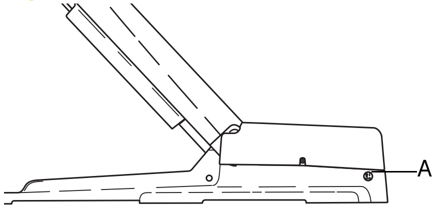
This section contains tips for troubleshooting common problems.

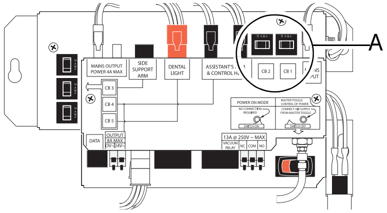
1. To effectively diagnose and repair problems: Define the problem as precisely as possible. What happens when the problem occurs. Is it a problem with the dental unit air, water or is it electrical? Is it user-related?
2. Gather information - Define the details of the problem and air, water or electrical system involved. When did the problem occur? Did anything change? Is the problem reproducible? Does it happen intermittently or all the time?
3. Try to remove variables by simplifing the issue into smaller pieces, until the piece is small enough that you can more easily find a solution. For example: disconnecting the data cables and footswitch from the chair circuit board permits you to use the circuit board test points to verify that the chair circuit board functions properly on its own.

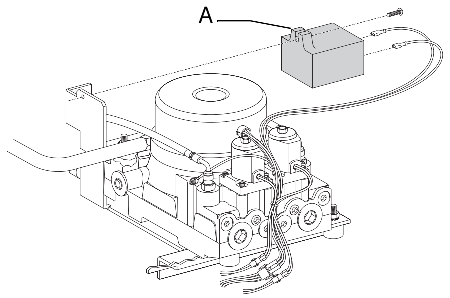
DENTAL CHAIR

Table 16 contains tips and troubleshooting information to assist in diagnosing chair problems. These tables are not intended to cover every situation, but do include the most common problems that you may encounter.

Table 16 **Chair Troubleshooting**

Problem	Possible Cause	Action
No power to chair or unit. Office still has power.	The chair is unplugged.	**1.** Verify power is available at the outlet. **2.** Plug chair in to power source.
	The power button is in Off position.	Press in power button (see Figure 260). Figure 260 **Power Button**  (A) Power Button
	No pilot air to power supply.	**1.** Check air regulator pressure gauge for 80 psi. **2.** Verify master On/Off toggle is in the On position. **3.** Verify pilot air is connected to the power supply and air manual shutoff valve is fully open.

Problem	Possible Cause	Action
No power to chair or unit. Office still has power.	Power supply circuit breaker CB1 or CB2 has tripped or (see Figure 261).	1. Check circuit breaker and reset. 2. If the circuit breaker trips again, 3. disconnect all power cables, including the chair circuit breaker connector P4, from the power supply. 4. Reset the circuit breaker. 5. Reconnect the power cables one at a time observing which one causes the circuit breaker to trip. 6. Identify the wiring problem circuit, and repair or replace as needed. **Figure 261** **Power Supply**  (A) CB1 and CB2
	Power supply has failed	If circuit breaker trips with all output cables disconnected, replace the power supply.

Problem	Possible Cause	Action
No base and back up function. The motor relay clicks. Base and back up LEDs (DS9 or DS11) turn on. The chair base and back down functions work.	Disconnected capacitor.	**1.** Verify the base up or back up relay clicks and the LED (DS9 or DS11) on the chair circuit board is illuminated. **2.** Check capacitor connections (see Figure 262). **3.** Turn power off if disconnected. **4.** Reconnect cables. **WARNING** Discharge the capacitor with an insulated screwdriver across the connectors before disconnecting or connecting the cables. Figure 262 **Capacitor**  (A) Capacitor
	Failed capacitor.	Replace the capacitor with one of correct voltage.
No base or back down. Relay clicks and DS12 LED illuminates.	Failed base down solenoid coil.	**1.** Check for magnetic pull while operating base or back down function. **2.** Check for correct resistance value at solenoid connector: 100 - 120 VAC, 177 Ohms ± 18 Ohms 220 - 240 VAC, 845 Ohms ± 85 Ohms **3.** Replace solenoid. **WARNING** Depressurize system before replacing the failed solenoid. To operate chair to full Base Down and Back Down, switch the good solenoid coil for the failed one and operate the function until full down position is reached.
Back down is pressed, base moves or base down is pressed, back moves.	The base and back solenoid connectors are switched.	Connect the solenoids correctly.

Problem	Possible Cause	Action
Base or back moves up for only one second, no automatic buttons work (limp-along feature). DS5 - (back) not illuminated DS6 - (base) not illuminated	The potentiometer for that movement is disconnected.	**1.** Check potentiometer connections to the chair circuit board. **2.** Reconnect if disconnected.
	Failed potentiometer.	**1.** Check for resistance. The resistance should be 10K ohms +/- 1500 ohms. **2.** Replace the potentiometer as a complete assembly.
Base Down and programmed positions do not work, but the chair back functions. A-dec status icon is flashing. DS4 red LED on the chair circuit board is illuminated.	Limit switch for chair is activated.	Check for obstruction under chair and remove.
	Limit switch for chair has failed.	Disconnect the chair limit switch connector at the chair circuit board and insert a jumper. • If the red LED (DS4) goes out and the chair base down and program positions work, replace limit switch assembly. • If the red LED (DS4) stays lit, replace the chair circuit board.
	Support side arm limit switch is activated.	Check for obstruction under support side arm and remove.
	Support side arm limit switch has failed.	Disconnect the support side limit switch wiring from the chair limit switch connector and insert a jumper. • If the red LED (DS4) goes out and the chair works, replace the side support limit switch. • If the red LED (DS4) stays lit, then replace the chair limit switch assembly.

Problem	Possible Cause	Action
No chair movement from a touchpad. The touchpad status A-dec logo icon and chair circuit board status LED (DS2) are illuminated.	Touchpad DCS is interrupted.	**1.** Verify the chair operates with the footswitch. If a footswitch is not installed, use the chair circuit board test points. **2.** Disconnect all data lines from the chair circuit board except the delivery circuit board data line. Check the chair circuit board data LED (DS3). • If the data LED is off, temporally connect a known good data line between the touchpad and the chair circuit board. • If the chair circuit board data LED comes on and the chair operates normally, remove and replace the data line in the unit. • If the chair circuit board data LED stays off, remove and replace the touchpad. **NOTE** The data and power to the control head mounted touchpad are routed via the control head circuit board. Power is supplied using black/gray wires.
No chair movement from the touchpad, status icon is not illuminated.	Faulty touchpad.	Verify AC power to chair and that chair can be operated from the footswitch or other touchpad. Verify 24 VAC to touchpad circuit board. If 24 VACs present, replace the touchpad.
	Faulty touchpad power cable.	Verify the AC power LED (DS1) is illuminated on the delivery system circuit board or chair circuit board. Verify the touchpad functions normally by using an external touchpad power cable. Replace the touchpad power cable, if needed.
Base or back does not move to full up position. The position sensor LED for that function on the chair circuit board is flashing.	Position sensor connection (P1 and P2) on the chair circuit board are switched.	Connect potentiometers to correct chair circuit board locations: P1 — Back potentiometer P2 — Base potentiometer
Base or back does not move to full up position. The position sensor LED for that function on the chair circuit board is flashing.	The chair soft stops are not established.	**1.** Place the jumper in the factory default position in the P3 test header. The chair automatically establishes the soft stops for the chair base and back. When factory default completes, the chair beeps three times to indicate success. **2.** Place the jumper back in the spare position on the test header and verify the chair operates normally. **3.** Program the chair presets.

Problem	Possible Cause	Action
Unable to change chair programmed positions.	Position sensor connections (P1 and P2) on the chair circuit board are switched.	Connect potentiometers to correct board locations: P1 — Back potentiometer P2 — Base potentiometer
	The potentiometer for that movement is disconnected.	**1.** Check potentiometer connections to the chair circuit board. **2.** Reconnect if disconnected.
	Failed potentiometer.	**1.** Check for resistance. The resistance should be 10K ohms +/- 1500 ohms. **2.** Replace the potentiometer as a complete assembly.
The three-tap feature used at installation no longer works.	The three tap feature is disabled.	The three tap feature is disabled when a powered touchpad has been connected to the DCS, a footswitch is installed or the test points have been used to move the chair. To re-enable the three tap feature: **1.** Disconnect the DCS touchpad connections **2.** Disconnect the footswitch **3.** Cycle power to the chair
No or limited chair functions from footswitch.	Footswitch connector/wiring is damaged.	Verify chair operates from a touchpad or the test points (P3). Replace the footswitch connector and/or wiring assembly.
	Footswitch membrane is damaged.	Check footswitch connectors and membrane, replace as necessary.

Problem	Possible Cause	Action
The chair makes a growling noise when Base Up or Back Up is pressed.	Chair is low on hydraulic fluid.	**1.** Remove motor pump, lift arm and stop plate covers. **2.** Check fluid level with chair base and back up by viewing the reservoir from the back of the chair. **3.** Add fluid to maximum level. **CAUTION** Use only A-dec hydraulic fluid, P/N 61.0197.00.
	Hydraulic hose from reservoir to pump is pinched.	**1.** Inspect all hydraulic hoses, ensure they are not being pinched in any position. **2.** If the supply tube between the pump and the reservoir is kinked, order and install kit P/N 90.1100.00.
	Motor pump has an obstruction or is damaged.	If chair continues to growl, lower base and add up to 4 oz (.12 l) more fluid. If noise continues, replace motor assembly.
A button on a touchpad does not work. Function works from other location(s).	Faulty touchpad.	**1.** Verify the touchpad circuit board is snapped into the plastic cover. **2.** Verify the function does work from other locations (footswitch, chair test points, light switches, cuspidor buttons). **3.** If the function still does not work, replace the touchpad.
The automatic positions do not work, the A-dec logo is flashing, double blinks.	The jumper is in the factory default position on the chair circuit board test points (P3).	Move the jumper from the factory default position to the "spare" position on the test points.
The chair will not move up from the full base down with the foot control under the stop plate.	The automatic chair lockout feature has been activated by air coolant from the foot control.	**1.** Raise the control head cover and disconnect the delivery system data line. **2.** Use the assistant's touchpad or footswitch to raise the chair. **3.** Remove the foot control from under the chair lift arm. **NOTE** Revision D and later chair circuit boards will bump up if the foot control and chair limit switch is activated at the same time.
The chair glide bar slides down or is difficult to lift up.	The glide needs adjusting or the wear pads need replacing.	Adjust or replace the glide bar components as necessary.
Headrest does not lock or is difficult to unlock.	The headrest needs adjustment or needs replacing.	If the operating lever is too tight, adjust for slight play in movement. If the headrest still does not work correctly, replace it as an assembly. No field service to locking components.

Problem	Possible Cause	Action
Armrest(s) do not lock in up position or are difficult to operate.	Armrest is damaged.	Replace armrest assembly.
Circuit breaker 1 or 2 opens.	Electrical short in a module.	**1.** Disconnect all modules from the power supply. **2.** Reset the circuit breaker. **3.** Reconnect modules one at a time until circuit breaker trips. Refer to troubleshooting for that module.
Circuit breaker does not reset.	Faulty circuit breaker.	Replace the power supply.
Chair brake does not hold.	Brake needs adjusting or the pad needs replacing.	Adjust or replace brake components as necessary.

ELECTRICAL WARNING The solenoid coils are powered by line voltage (100, 100 - 120, or 220 - 240 VAC). Failure to unplug the chair may result in serious injury from electrical shock.

WARNING The hydraulic system must be depressurized before removing the solenoid. To depressurize the hydraulic system, remove the failed solenoid coil and replace with the operating solenoid coil. Lower the chair base and back.

NOTE When replacing a solenoid, wipe up any oil, and replace existing O-rings on the solenoid base.

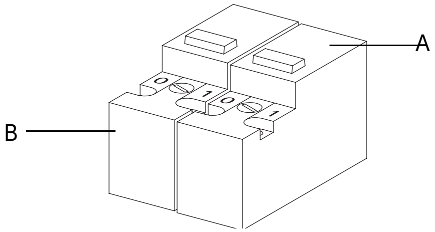
DELIVERY SYSTEMS

Table 17 contains tips and troubleshooting information to assist you in diagnosing the most common delivery system problems that you may encounter.

Table 17 **Delivery System Troubleshooting**

Problem	Possible Cause	Action
No water to all handpieces and the syringe.	Empty water bottle.	Refill bottle with treatment water.
	Kinked air or water tubing.	Check the water and air tubings for kinks or obstructions.
	Restrictor setscrew plugged in the water bottle receptacle.	Remove the restrictor setscrew and use air to blow out debris. If the restrictor setscrew cannot be cleared, replace it.
	Failed self-contained water system regulator.	To test for failure: **1.** Remove the restrictor setscrew from the water bottle receptacle and install a 1/8" barb and washer. **2.** Using 1/8" tubing, connect an air pressure gauge to the barb. The pressure gauge should indicate between 35-40 psi. If not, replace the water bottle receptacle.

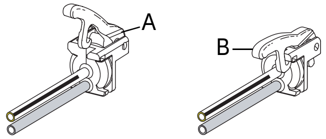
Problem	Possible Cause	Action
No water coolant to all the handpieces.	Empty water bottle.	Fill the water bottle with treatment water.
	The wet/dry toggle on the foot control is in the dry position.	Standard or no touchpad: **1.** Pick up a wet handpiece. **2.** Move the wet/dry toggle to the wet (blue dot) position. Deluxe touchpad: **1.** Pick up a wet handpiece. **2.** Verify that the water coolant icon appears on the touchpad screen. **3.** If not, flip the wet/dry toggle on the foot control or press the water coolant button on the touchpad.
	Water coolant air signal shuttle valve faulty.	Check for air leaking from the flush toggle valve when the foot control is stepped on. If a leak is present, replace the shuttle valve.
	No water coolant air signal from the foot control wet/dry toggle (standard or no touchpad).	Check the clear tubing from the foot control for kinks or obstructions: **1.** Disconnect the clear tubing from the in-line barb in the chair lift arm. **2.** With the wet/dry toggle in the wet position (toward blue dot), step on the foot control. There should be ~80 psi (5.52 bar) of air at the tubing end. **3.** If no air is present, check: • Wet/dry toggle • Plugged barbs • Adequate air supply
	Water coolant flow controls require adjustment.	See Adjust Water Flow Coolant in Delivery System section.

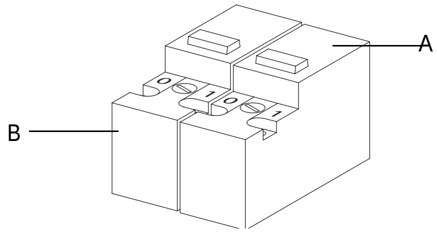
Problem	Possible Cause	Action
No water coolant to all the handpieces.	Water coolant solenoid does not activate. LED (DS5) is not on (deluxe touchpad).	Verify the water solenoid (DS5) on the control head circuit board is on (deluxe touchpad) Deluxe touchpad: **1.** Activate handpiece. **2.** Flip the foot control wet/dry toggle or press the water coolant button. **3.** Verify the water coolant icon displays on the touchpad and there is water coolant to the handpiece. **4.** If no coolant, verify LED (DS5) is lit. • If not lit, replace the control head circuit board. • If lit, use a small flat tipped screwdriver to manually override (open) the water solenoid. Figure 263 **Solenoid**  (A) Water Solenoid; (B) Air Solenoid

Problem	Possible Cause	Action
No water coolant to one handpiece.	Water coolant adjustment stem closed or requires adjustment.	See Handpiece Control Adjustments in Delivery System section.
	Water coolant not activated.	Standard or no touchpad: **1.** Activate handpiece. **2.** Flip the foot control wet/dry toggle toward the blue dot. **3.** Verify the handpiece has water coolant. Deluxe touchpad: **1.** Activate handpiece. **2.** Flip the foot control wet/dry toggle or press the water coolant button. **3.** Verify the water coolant icon displays on the touchpad and there is water coolant to the handpiece. **4.** If no coolant, verify LED (DS5) is lit. **5.** If not, replace the control head circuit board.
	Plugged handpiece tubing, terminal or coupler.	**1.** Remove handpiece and coupler from tubing. **2.** Operate foot control with water coolant On. **3.** Check to see if water is coming out of the handpiece tubing. **4.** If no water, check for water coolant at the handpiece position on the control block.
	Failed water coolant cartridge.	Exchange the failed cartridge with known good cartridge and test the handpiece position.
	Dry cartridge is in the handpiece water cartridge position of the control block.	Replace the dry cartridge with a water cartridge.
Sputtering water from syringe and handpieces.	Faulty or dirty O-ring on barb of water bottle pickup tube.	Replace the O-ring. Apply a thin application of silicone grease to the new O-ring.
	Damaged pick-up tube.	Replace pick-up tube.
Intermittent water coolant to handpieces.	Faulty O-rings on handpiece coupler.	Replace the O-rings on the handpiece coupler.

Problem	Possible Cause	Action
Intermittent water coolant to handpieces.	Water coolant pressure too low, or air coolant pressure too high.	Adjust water and air coolant as required. See Handpiece Control Adjustments in Delivery System section.
	Water bottle pickup tube too long.	Shorten the pickup tube with a diagonal cut at the end.
Water leaks from vent hole in control block when a wet handpiece is in use.	Faulty water coolant cartridge.	**1.** Replace water coolant cartridge with known good cartridge. **2.** If water continues to leak from vent hole, inspect the control block for debris or scratches. **3.** Replace if necessary.
A wet handpiece drips water while in its holder.	Faulty water coolant cartridge.	**1.** Replace water coolant cartridge with known good cartridge. **2.** If water continues to leak from handpiece, inspect the control block for debris or scratches. **3.** Replace if necessary.
	Faulty handpiece or coupler.	**1.** Remove handpiece and coupler. **2.** Reset water coolant flow.
	Faulty control block diaphragm.	Replace the diaphragm.
Water leaks from the water coolant stem.	Damaged O-rings on water coolant stem.	Replace the stem or the O-rings on the stem.
Water continues to flow after foot control is released.	Restricted water coolant tube in the handpiece or coupler.	**1.** Remove handpiece and coupler. **2.** Retest water coolant flow.
	Pinched tubing in the foot control.	Check that the green tube with the long dash is not pinched between the foot control and the control head.
	Water coolant flow set too high.	See Handpiece Control Adjustments in Delivery System section.
	The foot control relay valve sticks.	Install a foot control field service kit in the foot control.

Problem	Possible Cause	Action
Any handpiece drips when lifted from holder. Foot control is not activated.	Faulty flush toggle valve.	**1.** Check for 80 psi air to flush valve. **2.** Replace O-rings on flush valve stem or replace the flush toggle valve.
	Faulty control block diaphragm.	Replace the control block diaphragm.
Water continues to flow after foot control is released only in air/water combined mode.	Faulty relay stem in foot control relay.	Install a foot control field service kit in the foot control P/N 90.0593.00.
	Pinched tubing in the foot control.	Check that green long dash tubing is not kinked or pinched in the umbilical between the foot control and the control head.
	Water coolant flow set too high.	See Handpiece Control Adjustments in Delivery System section.
	The foot control relay valve sticks.	Install a foot control field service kit in the foot control.
Cannot flush one or more handpiece tubings.	A dry cartridge is in place for this handpiece.	Change the dry cartridge to a water cartridge.
	Handpiece or coupler plugged.	Remove handpiece and coupler and test flush.
Excessive water coolant at all wet handpieces. Water coolant flow adjustments do not affect flow.	Flush water hold back has failed.	**1.** Check for 80 psi air out of the flush valve to the control block. **2.** Check for pinched yellow tube between the flush valve and the control block. **3.** If no pinched tubing, replace the flush valve.

Problem	Possible Cause	Action
DCS does not recognize new handpiece (deluxe touchpad only).	Handpiece not configured.	Configure handpiece. Configure handpiece as “other” if type of handpiece not listed in the configuration selections.
	Holder valve is inactive (locked open).	Activate the holder valve by unhooking the valve arm (see Figure 264). Figure 264 **542 Holder Valve**  (A) Active; (B) Non-Active
	Holder valve does not exhaust holdback air when the handpiece is picked up.	Replace failed holder valve.
Unable to combine air and water coolant functions with the foot control wet/dry toggle, or by pressing the coolant button on the touchpad (deluxe touchpad).	Deluxe touchpad is not programmed for combined air/water coolant function.	**1.** Press and hold the Program button and either the air or water coolant button simultaneously for three seconds. **2.** Three beeps signal the functions are now combined.

Problem	Possible Cause	Action
Unable to combine air and water coolant functions with the foot control wet/dry toggle, or by pressing the coolant button on the touchpad (deluxe touchpad).	One of the coolant solenoids has failed or is disconnected from the delivery system circuit board.	**1.** Activate a handpiece. **2.** Verify the coolant LEDs (DS5 and DS6) are illuminating on the delivery system circuit board. • If not, verify that the solenoid is connected to the delivery system circuit board. • If connected, replace the solenoid and verify coolant operation. **NOTE** Use a small flat tipped screwdriver to manually override (open) the water solenoid if you do not have a spare solenoid. Figure 265 **Solenoid**  (A) Water Solenoid; (B) Air Solenoid
Buttons on the touchpad do not work. The status icon LED is on.	Faulty data port on the control head circuit board for touchpads mounted on the control head, otherwise there is a faulty data port on the chair circuit board.	Move data line to different data port.
	Faulty data line from touchpad to control head circuit board chair circuit board.	Replace data line with known good data line.
	Faulty touchpad.	**1.** Verify the touchpad circuit board is seated securely into the touchpad cover. **2.** If touchpad still does not function, replace with known good touchpad.
Touchpad does not operate chair, cuspidor or light functions.	Faulty data line from delivery system circuit board to chair circuit board.	Replace delivery system data line.

Problem	Possible Cause	Action
Touchpad status icon does not light when the master on/off toggle is on.	No power to chair.	Verify the chair is plugged in, the power button is On and the pilot tubing is connected to the power supply air-electric switch.
	No power to touchpad.	**1.** Verify that DS1 is illuminated on the delivery system circuit board. **2.** If DS1 is not illuminated, check for 24 VAC across J1 and J2 on the circuit board. **3.** Check for an open circuit breaker on the 300W power supply.

Problem	Possible Cause	Action
Deluxe touchpad screen is blank. The status LED icon is on.	Contrast needs adjustment.	For deluxe touchpads manufactured prior to May 2006: **1.** Press and hold the + and Program buttons for three seconds. The contrast adjustment screen appears. **2.** Adjust the contrast with the + and - buttons. **3.** Press Program to exit and return to normal operating screen. Both A and B settings are changed with this adjustment. For deluxe touchpads manufactured after May 2006: **1.** Press the Program and A/B button simultaneously until the touchpad switches to the handpiece configuration routine. **2.** Press Back-up (select) to enter system set up. **3.** Press Base-down to move the cursor to touchpad, then press Select. **4.** Follow the instructions on the screen to adjust the screen contrast as needed. **5.** To exit the handpiece configuration routine, press and release Back-down (cancel) until the A-dec logo appears on the touchpad screen. Both A and B settings are changed with this adjustment.
Low air pressure to syringe or handpieces when in use.	Plugged filter on air filter regulator.	Replace the filter.

Problem	Possible Cause	Action
Handpiece holder valve leaking air.	Faulty holder valve.	**1.** Verify the holder valve is not plumbed backward. **2.** Replace holder valve.
Handpiece holder valve not exhausting.	Holder valve locked.	Verify the holder valve is active (unlocked).
	Faulty holder valve.	Replace holder valve.

DATA COMMUNICATION SYSTEM

The touchpad screen, touchpad LEDs and LEDs on the circuit boards verify DCS and DCS module status. The LEDs use color and blinking to indicate the DCS module status. The table lists tips and troubleshooting information to assist in diagnosing the most common problems.

Table 18 contains tips and troubleshooting information to assist in diagnosing DCS problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Off = Function is turned off, device is disconnected, no power or failed circuit board; **Blue steady** = Normal operation; Yellow = advisory

Table 18 **Touchpad Screen Icons and LEDs**

LED	Assistant's Touchpad and Standard Touchpad	Deluxe Touchpad
Status (A-dec logo)	Off = system is not functioning	
	Blue steady = normal condition (ready for use)	
	Blue double blink = jumper is in the factory default position on the chair circuit board	
	Blue slow blink = chair, cuspidor or lower support arm stop switch is activated	
Dental light	Off = dental light is off	
	Yellow steady = dental light is on in high or medium intensity	
	Yellow slow blink = dental light is on in composite intensity	
Auxiliary #1 or bowl rinse	Off = auxiliary #1 is off or bowl rinse is off	N/A (see bowl rinse)
	Yellow - auxiliary #1 is on or bowl rinse is on	N/A (see bowl rinse)
Auxiliary #2 or cup fill	Off = auxiliary #2 is off or cup fill is off	N/A (see cup fill)
	Yellow = auxiliary #2 is ON or cup fill is ON	N/A (see cup fill)

LED	Assistant's Touchpad and Standard Touchpad	Deluxe Touchpad
Bowl rinse	N/A (shared with auxiliary #1 above)	Off = bowl rinse is off
		Yellow = bowl rinse is on
Cup fill	N/A (shared with auxiliary #2 above)	Off = cup fill is off
		Yellow = cup fill is on
Auxiliary #1 or #2	N/A (shared with auxiliary #1 or #2 above)	Off = auxiliary device is off
		Yellow = auxiliary device is on

Off = Function is turned off, device is disconnected, no power or failed circuit board; **Blue steady** = Normal operation; Yellow = advisory

Table 19 Printed Circuit Board LEDs

LED	A-dec Relay Module	Dental Light	Cuspidor	Delivery System	Chair
AC power	Off = no 24 VAC power, open circuit breaker, power supply turned off, no line voltage				
	Green steady = 24 VAC power at terminal strip				
Status	Off = system is not functioning, no power or circuit board has failed				Off = system is not functioning, no power or circuit board has failed
	Green steady = normal condition				**Green steady** = normal condition
					Green double blink = jumper is in the factory default position
Data (DCS)	Off = no data communication, not connected to the data line connector, data line is not functioning				
	Green steady = active DCS is detected				
	Green blinking = valid DCS message				
A-dec relay module	Off = Relay is off	N/A	Off = relay is off	N/A	N/A
	Yellow = Relay is on		**Yellow** = relay is on		
Bowl rinse/cup fill relays	N/A	N/A	Off = relay is off	N/A	N/A
			Yellow = relay is on		
Cuspidor stop switch	N/A	N/A	Off = closed (normal)	N/A	N/A
			Red = open (activated)		
IOLS output	N/A	N/A	N/A	Off = IOLS voltage is off	N/A
				Yellow = IOLS voltage is on	
Scaler relay	N/A	N/A	N/A	Off = Scaler relay is off	N/A
				Yellow = Scaler relay is on	
Air/water coolant solenoids	N/A	N/A	N/A	Off = solenoid is off	N/A
				Yellow = solenoid is on	
Chair or lower support arm stop switch	N/A	N/A	N/A	N/A	Off = closed (normal)
					Red = open (activated)

LED	A-dec Relay Module	Dental Light	Cuspidor	Delivery System	Chair
Chair lockout	N/A	N/A	N/A	N/A	Off = closed (normal)
					Red = open (activated)
Vacuum relay	N/A	N/A	N/A	N/A	Off = vacuum relay is off
					Yellow = vacuum relay is on
Dental light	N/A	**DS4** Off & **DS5** Off = dental light off	N/A	N/A	**DS8** Off & **DS7** Off = dental light off
		DS4 On & **DS5** Off = dental light in high intensity mode			**DS8** On & **DS7** Off = dental light in high intensity mode
		DS4 Off & **DS5** On = dental light in composite intensity mode			**DS8** Off & **DS7** On = dental light in composite mode
		DS4 On & **DS5** On = dental light in medium intensity mode			**DS8** On & **DS7** On = dental light in medium mode
Chair position sensors	N/A	N/A	N/A	N/A	Off = sensor not connected, bad connection, moving in wrong direction, limited range of motion, or cable not on wheel
					Yellow steady = normal operation
					Yellow fast blink = Upper end of travel
Back and base relays	N/A	N/A	N/A	N/A	Off = relay is off
					Yellow = relay is on

CUSPIDOR

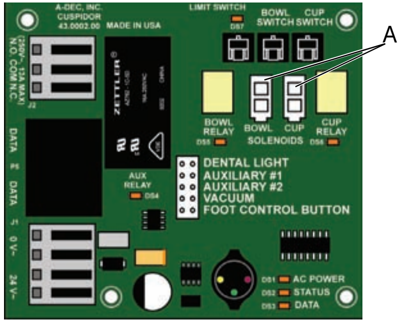
Table 20 contains tips and troubleshooting information to assist in diagnosing cuspidor problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 20 **Cuspidor Troubleshooting**

Problem	Possible Cause	Action
DS1 - AC Power LED	Off	No 24 VAC power, tripped circuit breaker, power supply turned Off, no line voltage.
	Green, steady	24 VAC at terminal strip.
DS2 - Status LED	Off	System is not functioning, no power or circuit board has failed.
	Green, steady	Normal condition.
DS3 - Data LED	Off	No DCS communication, not connected to the data communication system, the DCS has failed.
	Green, steady	Active DCS detected.
	Green, blinking	Valid DCS message.
DS4 - Auxiliary relay LED	Off	Auxiliary relay is off.
	Yellow	Auxiliary relay is on.
DS5, DS6 - Bowl rinse/cup fill relays	Off	Relay is off.
	Yellow	Relay is on.
DS7 - Cuspidor limit switch LED	Off	Limit switch is not activated (closed).
	Red	Limit switch is activated (open).
Water drips from the cup fill spout	The cup fill solenoid has failed.	**1.** Using the master On/Off toggle, turn the unit OFF. **2.** Use a syringe to bleed the dental unit water pressure. **3.** Remove the cup fill solenoid and replace.
Water drips from the bowl rinse spout	The bowl rinse solenoid has failed.	**1.** Flip the master on/off toggle to the OFF position. **2.** Use a syringe to bleed the dental unit water pressure. **3.** Replace the bowl rinse water solenoid.

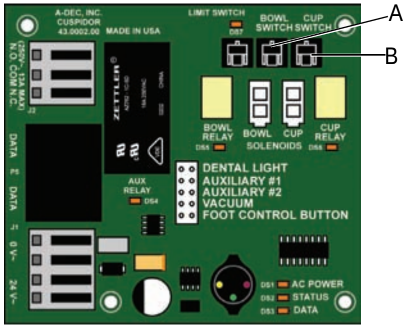
<table>
<tr><th>Problem</th><th>Possible Cause</th><th>Action</th></tr>
<tr><td>Cup fill and bowl rinse functions are switched.</td><td>The cuspidor water solenoid connectors are reversed on the cuspidor circuit board.</td><td>Switch water solenoid connections at P6 and P7.

Figure 266 Cuspidor Circuit Board Solenoid Location

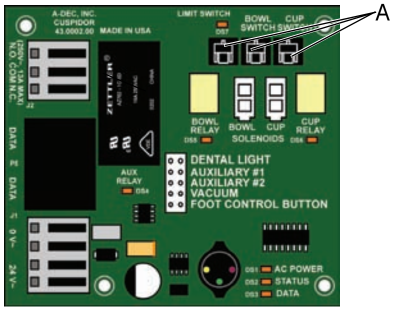

A-DEC, INC.
CUSPIDOR
43.0002.00 MADE IN USA
LIMIT SWITCH
BOWL SWITCH
CUP SWITCH
A
ZETTLER
BOWL RELAY
BOWL
CUP
SOLENOIDS
CUP RELAY
AUX RELAY
DENTAL LIGHT
AUXILIARY #1
AUXILIARY #2
VACUUM
FOOT CONTROL BUTTON
DATA
DATA
0 V~
24 V~
AC POWER
STATUS
DATA

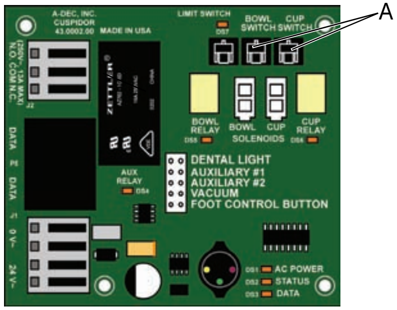
(A) Water Solenoid Connections</td></tr>
<tr><td>Cup fill and bowl rinse functions are switched at the tower buttons only (touchpads operate normally).</td><td>The cuspidor tower switch connectors are reversed on the cuspidor circuit board.</td><td>Switch tower switch connections at P2 and P3.

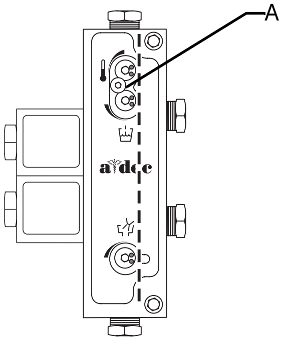
Figure 267 Cuspidor Circuit Board Bowl and Cup Switch Locations


A-DEC, INC.
CUSPIDOR
43.0002.00 MADE IN USA
LIMIT SWITCH
BOWL SWITCH
CUP SWITCH
A
B
ZETTLER
BOWL RELAY
BOWL
CUP
SOLENOIDS
CUP RELAY
AUX RELAY
DENTAL LIGHT
AUXILIARY #1
AUXILIARY #2
VACUUM
FOOT CONTROL BUTTON
DATA
DATA
0 V~
24 V~
AC POWER
STATUS
DATA

(A) Bowl Rinse Switch; (B) Cup Fill Switch</td></tr>
</table>

Problem	Possible Cause	Action
Water runs constantly from either the cup fill or bowl rinse spout. The red LED (DS7) is illuminated on the cuspidor circuit board.	The cuspidor stop switch connector is reversed with one of the cuspidor tower switch connectors.	The red LED (DS7) on the cuspidor circuit board is illuminated. **1.** Disconnect all three switch connectors from the cuspidor circuit board. One at a time, connect each of the switch connectors to the cuspidor circuit board until the red LED goes out. **2.** Connect one of the remaining switch connectors to P3 on the cuspidor circuit board, and the other switch connector to P2. **3.** Verify that a cup fill cycle runs when requested from the cuspidor tower cup fill button. **4.** If the bowl rinse runs, swap the two switch connections to the cuspidor circuit board. **Figure 268** **Cuspidor Circuit Board Switch Connector Location**  (A) Switch Connectors
Cup fill spout sputters air/water.	The self-contained water bottle is empty or nearly empty.	Refill the bottle.
The cup fill spout sputters excessively.	The cuspidor air trap valve is faulty.	Remove and replace the air trap valve.
Cuspidor works but the red LED (DS7) on the cuspidor circuit board is illuminated.	The cuspidor stop switch is activated or the wiring is faulty.	**1.** Remove any obstacles from under the cuspidor bowl. **2.** Disconnect the cuspidor stop switch from P4 on the cuspidor circuit board; install the jumper from P1 on the cuspidor circuit board. **3.** If the red LED on the cuspidor circuit board goes out, the cuspidor stop switch or wiring is faulty and must be replaced.

Problem	Possible Cause	Action
Bowl rinse button on the cuspidor tower does not work. The function does work from the touchpad.	Cuspidor tower bowl rinse button assembly is faulty or is disconnected from the cuspidor circuit board P2 connector.	Visually inspect the cuspidor circuit board. Ensure that the cuspidor tower switches are connected. • P2 - Bowl rinse switch • P3 - Cup fill switch If the switches are connected, check the continuity of the bowl rinse switch with an Ohm meter. With the bowl rinse switch held down (closed), it should measure less than ten Ohms. If it measures "open" across the closed switch, remove and replace the bowl rinse switch assembly (P/N 43.0010.00). **NOTE** Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective. **Figure 269 Cuspidor Circuit Board Tower Switches**  A-DEC, INC. CUSPIDOR 43.0002.00 MADE IN USA LIMIT SWITCH DS7 BOWL SWITCH CUP SWITCH A (250V~ 13A MAX) N.O. COM N.C. J2 BOWL RELAY DS5 BOWL CUP SOLENOIDS DS6 CUP RELAY DATA PE DATA J1 0 V~ 24 V~ AUX RELAY DS4 DENTAL LIGHT AUXILIARY #1 AUXILIARY #2 VACUUM FOOT CONTROL BUTTON DS1 AC POWER DS2 STATUS DS3 DATA (A) Tower Switches
Cup fill button on the cuspidor tower does not work.The function does work from the touchpad.	Cuspidor tower cup fill button assembly is faulty or is disconnected from the cuspidor circuit board P3 connector.	Visually inspect the cuspidor circuit board, ensure that the cuspidor tower switches are connected: • P2 - Bowl Rinse Switch • P3 - Cup Fill Switch If the switches are connected, check the continuity of the cup fill switch with an Ohm meter. With the cup fill switch held down (closed), it should measure less than ten Ohms. If it measures "open" across the closed switch, remove and replace the cup fill switch assembly (P/N 43.0010.00). **NOTE** Switching switch assemblies at P2 and P3 allows verification that the switch assembly is defective.

Problem	Possible Cause	Action
Inadequate or excessive cup fill water flow	The cup fill water flow needs adjustment	Open the cup fill flow controls for full water flow. Turn the flow controls to adjust the water flow. **Figure 270 Cuspidor Fill/Rinse Manifold**  (A) Flow Control
	The self-contained water system 40 psi regulator has failed	Test the 40 psi regulator: **1.** Turn the dental unit OFF using the master On/Off toggle. **2.** Remove the water bottle from the dental unit and set it aside. **3.** Remove the air bleed setscrew from the water bottle receptacle assembly and set it aside. **4.** Install an 1/8" barb with washer in the port where the air bleed setscrew was removed. **5.** Connect an air pressure gauge to the 1/8" barb using the 1/8" tubing. **6.** Turn the dental unit ON. The air pressure reading on the gauge should be 35 – 40 psi. If a reading of 35-40 psi could not be obtained at the air bleed setscrew port, the water bottle receptacle is faulty and must be replaced.

Problem	Possible Cause	Action
Inadequate or excessive cup fill water flow (continued).	The self-contained water system 40 psi regulator has failed.	If a reading of 35 – 40 psi could not be obtained at the air bleed setscrew port, the 40 psi regulator is faulty and must be replaced as follows: **1.** Turn the dental unit OFF using the master On/Off toggle on the delivery system. **2.** Remove the water bottle cap assembly from the post or side support. **3.** Remove and replace the water bottle receptacle. **4.** Reinstall the water bottle cap assembly and water bottle. **5.** Turn the dental unit ON and test the cup fill function for adequate water pressure.
	The self-contained water system air bleed set screw is partially clogged with debris.	**1.** Use the master On/Off toggle, to turn the dental unit off, and remove the water bottle. **2.** Remove the air bleed setscrew from the water bottle cap assembly and clean it of debris, or replace it. **3.** Reinstall the setscrew in the water bottle cap assembly and replace the water bottle. **4.** Turn the dental unit ON and test the cup fill function.
Inadequate bowl rinse water flow.	The bowl rinse water flow must be adjusted.	Adjust the bowl rinse flow clockwise to increase water flow, or counterclockwise to decrease flow, (one full turn from minimum to maximum).
	The water filter element is partially plugged.	Check for plugged water regulator filter element. **1.** Close the city water manual shut-off valve in the floor box and bleed the cuspidor bowl rinse water pressure, using the bowl rinse function. **2.** Turn the dental unit off using the master On/Off toggle on the delivery system and remove the water regulator filter element cap. Remove and discard the filter element. **3.** Install a new filter element on the water regulator and reinstall the filter cap. **4.** Open the city water manual shut-off valve. Turn the dental unit on using the master On/Off toggle, and test the bowl rinse function for adequate water flow.
	There is a kinked hose.	Check for a restriction downstream from the filter. Locate and eliminate any kinks in the blue 5/16" bowl rinse water tube.

Problem	Possible Cause	Action
Bowl rinse function does not work from the cuspidor tower and/or the touchpad bowl rinse button. The cup fill function does work.	The bowl rinse relay on the cuspidor circuit board has failed.	At the cuspidor circuit board, swap the water solenoid connectors at P6 and P7. Press the cup fill button on any touchpad or the cup fill switch on the cuspidor tower, if the bowl rinse runs, remove and replace the cuspidor circuit board.
	The cuspidor data line is damaged.	Ensure that the cuspidor tower switches are connected: • P2 – Bowl rinse switch • P3 – Cup fill switch Disconnect the data line from the cuspidor and press the bowl rinse switch on the cuspidor tower. If the bowl rinse runs, remove and replace the cuspidor data line.
	The bowl rinse solenoid has failed.	Remove and replace the bowl rinse water solenoid.
Cup fill function does not work from the cuspidor tower and/or from any touchpad cup fill button. The bowl rinse function does work.	The cup fill relay on the cuspidor circuit board has failed.	Swap the water solenoid connectors at P6 and P7, at the cuspidor circuit board. Press Bowl Rinse on any touchpad or the bowl rinse switch on the cuspidor tower. If the cup fill runs, remove and replace the cuspidor circuit board.
	The cuspidor data line is damaged.	Ensure that the cuspidor tower switches are connected correctly: • P2 – Bowl rinse switch • P3 – Cup fill switch Disconnect the data line from the cuspidor and press the cup fill switch on the cuspidor tower. If the cup fill runs, remove and replace the cuspidor data line.
	The cup fill water solenoid has failed.	Remove and replace the cup fill water solenoid.

FLOOR BOX

Table 21 contains tips and troubleshooting information to assist in diagnosing floor box problems.This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 21 **Floor Box Troubleshooting**

Problem	Possible Cause	Action
Unit air pressure drops when unit is in use.	Plugged filter element in air filter/ regulator.	**1.** Flip the master On/Off toggle to the On position and remove the floor box cover. **2.** Locate and observe the air pressure gauge in the floor box while pressing the syringe air button. If the air pressure drops more than 15 psi, the air filter is clogged. Replace filter.

DENTAL LIGHT

Table 22 contains tips and troubleshooting information to assist in diagnosing dental light problems. This table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 22 **Dental Light Troubleshooting**

Problem	Possible Cause	Action
Light does not work.	The lamp has failed.	Check for voltage at the lamp socket, if voltage is present, replace the lamp.
		Check the color of the lamp, replace if discolored.
	The dental light circuit breaker has tripped or power supply has failed.	Check circuit breaker and reset. If the circuit breaker trips again, disconnect the wiring harness from the power supply then reset the circuit breaker. If the circuit breaker trips again, replace the power supply or circuit breaker. Otherwise, reconnect the harness wires one at a time observing which one causes the circuit breaker to trip – that identifies the problem circuit.
		For 571 Dental Lights: • If CB5 on the 300W power supply is tripped, disconnect the dental light and reset the circuit breaker. If CB5 trips again, replace the power supply. Connect the dental light to the power supply, if CB5 trips, the dental wiring harness or a switch is faulty. For Model 6300 Dental Lights: • The dental light circuit breaker is near the power transformer. If the breaker is tripped, disconnect the dental light wiring harness from the transformer and reset the breaker. If the breaker trips again, replace the circuit breaker. If the breaker does not trip, the dental wiring harness or a switch is faulty.
	The lamp socket is faulty.	Replace the socket.

Problem	Possible Cause	Action
Light works from the touchpad(s) but not from the dental light switches.	Loose connection in the dental light wiring harness.	For all dental lights, verify that the red connector in the wiring harness is connected properly.
		Check the connections at the dental light switches and terminal J1 on the circuit board.
Light works from the dental light switches but not from a touchpad.	Faulty data cable to the Model 6300 dental light circuit board.	Temporarily substitute a known good cable to the circuit board, if the light works from the touchpad, replace the bypassed cable.
	Failed dental light switch on the touchpad.	Replace the touchpad.
Light head is loose or difficult to position.	Rotation tension screws are too loose or tight.	Adjust the appropriate axis tension.
Flexarm drifts.	Tension adjustment nut inside the flexarm is too loose or tight.	Adjust the flexarm counterbalance.
Track light trolley drifts.	Track is not level.	Use wedges to level the track light ceiling pallet (P/N 017.017.00).
Track trolley light bounces back when pushed to the end of the track.	Power cable is hanging up inside the track.	Check power cable in track for proper routing. If you cannot correct the routing of the cable, replace the cable assembly.
Light intensity is dim, inconsistent, or the color is distorted.	Reflector or light shield may be damaged.	Inspect the dental light shield and reflector for damage or contamination. Replace or clean as necessary. **CAUTION** Abrasives, disinfectants or chlorine damage the shield and reflector. Refer to the Instructions for Use for cleaning instructions.
	The intensity switch is in the medium or composite position.	Check the intensity switch position. **NOTE** Turning the light on when the intensity switch is in the composite position results in medium intensity.
	The mains voltage is low.	Verify the mains voltage is within specifications: 100/110-120/220-240 VAC
Unsatisfactory light pattern.	Light is out of focus, reflector or light shield may be damaged.	**1.** Focus the light. **2.** Check the light shield for severe abrasions, and replace if necessary. **3.** Clean the reflector and light shield.
One or more intensity positions do not function.	Transformer is not supplying one or more voltages.	Check for loose connections at the transformer. Measure the transformer output voltages. Check the power cable for continuity.

CLINICAL PRODUCTS

Warm Water Syringes

Table 23 contains tips and troubleshooting information to assist you in diagnosing the most common warm water syringe problems that you may encounter.

Table 23 **Warm Water Syringe Troubleshooting**

Problem	Possible Cause	Action
Water is cold or at room temperature (not heated).	No 24 VAC power to the warm water circuit board.	• If DS1 (AC power) is Off, check for 24 VAC at J1. • If no 24 VAC at J1, then verify power to the system, check for tripped circuit breakers and adequate air pressure at power supply air-electric switches.
	Warm water circuit breaker has failed	• If DS1 (AC power) is On and DS2 (Status) is Off, turn system off and back on. • If DS2 (status) remains Off, then replace the circuit board.
	Heater wire is disconnected or broken.	**1.** Verify heater wires connected to J2. **2.** Check continuity of heater wires with Ohm meter. (3.7 Ohms @ 77°F (25°C). **3.** If heater wires are broken, replace the syringe tubing assembly.
	Thermistor wires are disconnected or broken.	**1.** Verify thermistor wires are connected to P3. **2.** Check continuity of thermistor wires with an Ohm meter. (3.7 Ohms @ 77°F (25°C)) **3.** If thermistor wires are broken, replace the syringe tubing assembly.
Water is warm, but not warm enough.	Jumper on the warm water circuit board is missing (P1).	**1.** Verify there is a black jumper on the temperature header (P1). **2.** If no jumper, add a jumper to header P1.
	Jumper setting on the temperature header (P1) is too low.	**1.** Move the jumper on P1 one position toward "MAX" and test the syringe. **2.** Repeat until desired water temperature is reached.

Problem	Possible Cause	Action
Water is too hot.	Jumper setting on the temperature header (P1) is too high.	**1.** Move the jumper on P1 one position toward “MIN” and test the syringe. **2.** Repeat until desired water temperature is reached. **NOTE** The micro controller averages the two selections together if two jumpers are installed. Only the lowest two jumpers are recognized if three or more are installed.
	One or both thermistors are not in contact with the syringe heated tubing.	Replace the syringe tubing assembly.

Table 24 contains tips and troubleshooting information to assist you in diagnosing the most common warm water syringe problems that you may encounter.

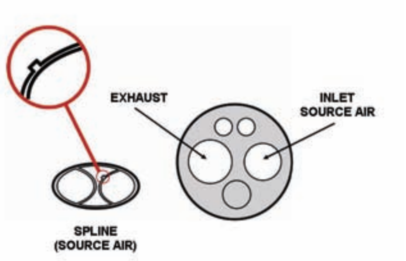
Table 24 **Warm Water Syringe Circuit Board LEDs**

Problem	Possible Cause	Action
DS1 AC power	Off	No 24 VAC power.
	Green, steady	24 VAC at the terminal strip.
DS2 Status	Off	System is not functioning.
	Green, steady	Normal operation.
DS3 Not used	Off	Reserved for future use.
DS4 Heater output	Off	Heater output is off.
	Green steady or blinking	Heater output is On when LED is On.
DS5 Thermistors	Off	Thermistors are not connected to P3.
	Yellow, steady	Normal operation.
	Yellow, blinking	One or both thermistors at high temperature threshold. Water heater is disabled.

Tooth Dryer

Table 25 contains tips and troubleshooting information are listed in the table to assist in diagnosing tooth dryer problems. This table is not intended to cover every situation, but includes the most common problems that may be encountered.

Table 25 **Tooth Dryer Troubleshooting**

Problem	Possible Cause	Action
Tooth dryer is not producing warm air.	Drive air pressure set too low.	Measure the drive air pressure at the handpiece. Set it between 60 and 80 psi for correct tooth dryer function.
	Tooth dryer has internal contamination.	**1.** Remove the tooth dryer from the handpiece tubing. **2.** Spray electronics degreaser into the exhaust port of the tooth dryer for five to ten seconds. **3.** Shake out the excess degreaser. **4.** Dry the tooth dryer by placing it back on its own dedicated handpiece tubing and operate the tooth dryer for ten to fifteen seconds.
	Drive air is connected to the exhaust tube on the tooth dryer.	Ensure the splined tube of the dedicated handpiece tubing is connected to drive air Table 271. Figure 271 **Tooth Dryer Tubing** 
Tooth dryer tip fell off.	Teflon tip glue has failed during sterilization.	Glue tip back in place with an instant adhesive.

A-dec Intraoral Camera

(October 2003- January 2007)

Table 26 contains tips and troubleshooting information are listed in the table to assist in diagnosing A-dec intraoral camera (October 2003 - January 2007) problems. This table is not intended to cover every situation, but includes the most common problems that may be encountered.

Table 26 **A-dec Intraoral Troubleshooting**

Problem	Possible Cause	Action
Camera LEDs turn on, then off.	Video input and output cable connectors on the back of the camera module are reversed.	Verify video input and output are on the correct connectors on the back of the camera module.
Camera is not functioning.	Monitor is not turned on.	Turn ON monitor.
	Monitor is not receiving power.	Replace power cord to monitor.
Camera is not functioning, the monitor is on. Camera is removed from tubing but color bars are displayed.	Camera is faulty.	Replace the camera.
	The monitor is not receiving a signal, or is malfunctioning.	Check the video connection, and make sure the monitor is set to the correct video mode.
		Connect a known good video cable to the monitor. If it works, install the new cable.
		Connect the monitor to another device (TV or PC). If the monitor functions, the problem is the result of another issue.
One or more LEDs do not illuminate when camera is in use.	The LED has burned out.	If two LEDs do not illuminate, replace the camera. You can use the camera with one LED burned out, but the image is darker.
Monitor image is blurry.	The transparent side of the disposable barrier is not sticking to the camera lens.	Adjust the disposable barrier so the transparent side is sticking to the camera lens.
Monitor image is indistinct or “rolls.”	Monitor settings are incorrect.	Refer to the monitor owner’s manual for factory default and settings instruction.
	Monitor and camera video standards do not match.	Replace the monitor with one whose video standard matches the standard marked on the camera (NTSC or PAL).
	Monitor uses outdated technology.	Install a newer model of monitor marked on the camera (NTSC or PAL).

Sopro Intraoral Cameras (717 and 595)

Table 27 contains tips and troubleshooting information to assist in diagnosing Sopro 717 and 595 intraoral camera problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 27 Sopro Intraoral Cameras (717 and 595) Troubleshooting

Problem	Possible Cause	Action
No video.	No power to DockMU module.	**1.** Check for 24 VAC at input of DockMU module. **2.** If no volt or voltage less than 24 VAC correct power supply issue.
	Problem with monitor or computer.	Verify proper operation of monitor or computer.
	Problem with video cable or USB cord.	**1.** Substitute a known good video cable or USB cord **2.** If problem corrected, replace video cable or USB cord.
	Defective DockMU module.	**1.** Substitute another DockMU module. **2.** If problem corrected, replace DockMU module.
Camera does not "go live."	Camera or cord connector damaged.	**1.** Inspect camera and cord connector for twisting or damage. **2.** If damaged repair camera or replace cord.
	Camera defective.	**1.** Try another camera. **2.** If problem corrected, have camera repaired.
	Air electric switch or wiring.	**1.** Place a jumper between terminals 1 & 2. **2.** If camera goes live check wiring and air electric switch for proper operation. Repair as needed.
	Camera cord connections to DockMU.	Verify Camera cord wires are properly connected at DockMU module Repair as needed.
	DockMU module defective.	**1.** Try another DockMU module. **2.** If problem corrected, replace DockMU module.
	Camera cord.	**1.** Substitute another camera cord. **2.** If problem corrected, replace camera cord.
Dust or black dot in image.	Camera has dust in lens.	Have camera repaired.

Problem	Possible Cause	Action
Poor image quality.	Monitor.	**1.** Verify monitor properly connected and adjusted. **2.** Correct monitor wiring and adjustment as needed.
	Camera.	**1.** Substitute another camera. **2.** If problem corrected, have camera repaired.
Cannot freeze image (touchfreeze).	DockMU setting.	**1.** DockMU jumper not set to touchfreeze. **2.** Set jumper to touchfreeze.
	DockMU wiring.	**1.** Check green and yellow wire connections at DockMU. **2.** Repair as needed.
	Camera.	**1.** Substitute another camera. **2.** If problem corrected, have camera repaired.
Cannot freeze image (footpedal).	DockMU setting.	**1.** DockMU jumper not set to footpedal. **2.** Set jumper to footpedal.
	DockMU wiring.	**1.** Check blue and violet wire connections at DockMU pins 9 & 10. **2.** Repair as needed.
	Air electric switch.	**1.** Check air electric switch and associated wiring for proper operation. **2.** Repair as needed.

SP Newtron

Table 30 contains tips and troubleshooting information to assist in diagnosing SP Newtron scaler problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 28 **SP Newtron Scaler Troubleshooting**

Problem	Possible Cause	Action
No water.	Water turned off.	Check that water is turned on.
	Obstruction in tip or wrong tip.	1. Remove tip from handpiece. 2. Check for water. If water adequate replace tip. Make sure tip has a water port. Tips designed to be used without water may not have a water port.
	Obstruction in handpiece.	1. Remove handpiece from cord. 2. Check for water. If no water, replace handpiece.
	Obstruction in line.	1. Remove handpiece and tip. 2. If no water, disconnect handpiece tubing water connection. 3. If water is present at connection point, replace handpiece tubing. 4. If no water present at handpiece tubing connection, check unit water supply.
Handpiece leaks water.	Tip without water port.	If tip type does not have a water port, turn off water or use tip with water port.
	Water leak at handpiece connector.	1. Replace small handpiece o-ring. 2. Inspect handpiece tubing for cracks around water port. If cracked, replace handpiece tubing. 3. If handpiece still leaks, replace handpiece.
No vibration or low vibration power.	Defective, worn, or broken tip.	Try new tip. If vibration is correct, replace tip.
	Defective handpiece.	Try another handpiece. If vibration ok replace handpiece.

Problem	Possible Cause	Action
	Broken wires in handpiece tubing.	**1.** Disconnect handpiece tubing connector at SP Newtron module. **2.** Check for continuity between orange wire and center pin of handpiece connector. **3.** Check for continuity between black wire and left pin of handpiece connector. **4.** If either wire is open, replace handpiece tubing.
	No power to module.	**1.** Select scaler and depress foot pedal. **2.** Check for 24VAC at SP Newtron harness grey and black wires. **3.** If no volt or if voltage less than 24 VAC, correct power supply issue.
	Power level low or missing (digital).	**1.** Set digital display to 100% power level. Check voltage at blue and brown wires. Note the brown wire is the ground reference. Voltage should change from 0 to 5 volts as foot pedal is depressed (0 - 100%). **2.** Repair or correct wiring as needed.
	Power level low or missing (potentiometer).	**1.** Check white and brown wires resistance should change from 0 to 4.7k ohms as power level is adjusted from 1 to 10. **2.** Repair wiring or potentiometer.
	Defective SP Newtron module.	**1.** Substitute another SP Newtron module. **2.** If vibration is correct, replace module.

MiniLED

Table 29 contains tips and troubleshooting information to assist in diagnosing MiniLED curing light problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 29 MiniLED Curing Light Troubleshooting

Problem	Possible Cause	Action
No power to handpiece (Green HP LED is off).	No power to MiniLED module.	Check for 24 VAC at input of MiniLED module. If no volt or if voltage is less than 24 VAC, correct power supply issue.
	No power output at MiniLED module.	**1.** Check for 5 VDC at MiniLED module output. **2.** If no voltage or voltage is low, replace MiniLED module.
	Broken wires in MiniLED cord.	**1.** Disconnect MiniLED cord wires at MiniLED module. **2.** Check for continuity between Red wire and center circle of HP connector. **3.** Check for continuity between black wire and outer ring of HP connector. **4.** If either wire is open, replace MiniLED cord.
	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Low (Blue) curing light output.	Low power to MiniLED module.	**1.** Check for 24 VAC at input of MiniLED module. **2.** If no volt or if voltage less than 24 VAC, correct power supply issue.
	Low power output at MiniLED module.	**1.** Check for 5 VDC at MiniLED module output. **2.** If no voltage or voltage is low, replace MiniLED module.
	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Cannot start cure cycle or change modes.	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.
Light guide loose in handpiece.	Defective MiniLED handpiece.	Replace or repair MiniLED handpiece.

EA-50/51LT Electric Micromotor

Table 30 contains tips and troubleshooting information to assist in diagnosing electric micromotor problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 30 EA-50/51LT Electric Micromotor Troubleshooting

Problem	Possible Cause	Action
Micromotor does not function.	Handpiece position is not programmed for electric handpiece on deluxe touchpad.	Program handpiece position for electric handpiece one if it is wired to terminal one on the micromotor controller. Program as electric handpiece two if it is wired to terminal two on the micromotor controller.
	Deluxe touchpad is programmed incorrectly.	Program handpiece position for electric handpiece one if it is wired to terminal one on the micromotor controller. Program as electric handpiece two if it is wired to terminal two on the micromotor controller.
	Micromotor is malfunctioning.	**1.** Verify the "R" (ready) LED is lit and green indicating micromotor is supplied 24 VAC. **2.** Verify the "C" (communication) LED is lit and green indicating a good data cable. **3.** Replace the micromotor. If the replacement micromotor functions correctly, return problem motor to A-dec.
	Faulty data line from micromotor controller to delivery system circuit board.	Verify the error LED on the micromotor controller is blinking red. Replace the data line.
Light is not working.	Bulb is burned out.	Replace bulb with dimple facing out.
Micromotor gets too warm to hold.	Water coolant is off.	Turn air and water coolant ON. If the problem continues, contact A-dec Customer Service.
	Drive air set too low.	Verify drive air is set at 60 psi.
Micromotor lacks cutting power with carbide burs.	Motor is in reverse.	Change setting on deluxe touchpad to "forward."
Micromotor lacks cutting power.	Drive air set too low.	Verify drive air is set at 60 psi.
Water leaking between micromotor and handpiece.	Defective O-rings.	Change all three O-rings.
Air or water leaking between micromotor and tubing.	Defective O-ring in tubing insert.	Change O-ring in tubing insert.

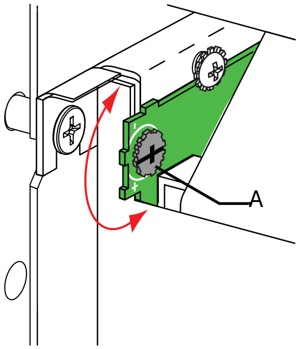
ICV

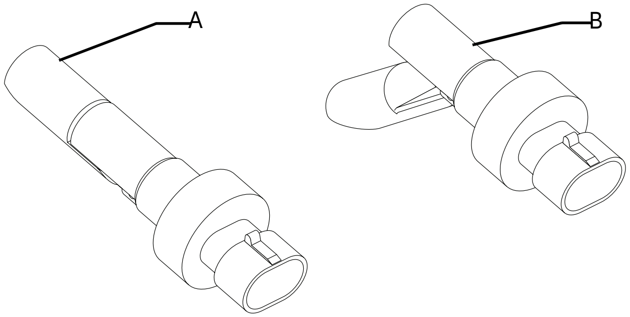
Table 31 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 31 **ICV Troubleshooting**

Problem	Possible Cause	Action
ICV is not starting and the panel power (status) indicator is OFF.	Panel wiring harness is not connected to the controller circuit board.	Verify that the panel wiring harness is properly connected to the controller and panel circuit board and that it is not damaged.
	No power to the controller circuit board.	**1.** Verify DS1 (AC Power) on the controller circuit board is ON. **2.** If DS1 is OFF, verify mains power is available at P11. **3.** Verify that the mains circuit breaker is not tripped.
	ICV controller circuit board failure.	Remove and replace the controller circuit board.

Problem	Possible Cause	Action
ICV is not starting and the panel power (status) indicator is ON.	Panel wiring harness is not properly connected to the controller circuit board.	**1.** Verify that the panel wiring harness is properly connected to the controller and panel circuit board. **2.** Verify the continuity of the panel to controller wiring harnesses.
	Temporary/permanent controller circuit board failure.	**1.** Verify DS1 (AC power) on the controller circuit board is ON. **2.** Verify DS2 (status) on the controller circuit board is ON. • If DS2 is OFF and DS1 in ON, cycle power to the circuit board by disconnecting mains power from P11 for five seconds. Reconnect the power. • If DS1 is ON and DS2 remains OFF, replace the controller circuit board. • If DS1 and DS2 are ON, disconnect the tank fluid level sensor at P6. • Verify DS6 is ON. **1.** If DS6 remains OFF with the level sensor disconnected, cycle power to the circuit board by disconnecting mains power from P11 for five seconds. • Reconnect power. • If DS6 remains OFF with the fluid level sensor disconnected, replace the controller circuit board.
	Panel wiring harness or panel circuit board failure.	**1.** Disconnect the panel wiring harness from P4 (Operatory A) on the controller circuit board (P5 for Operatory B). **2.** Verify the continuity of the panel to controller wiring harnesses. **3.** Momentarily short pin 1 to pin 2 on P4 or P5. If a flush cycle starts, remove and replace the panel circuit board. If a flush cycle will not start, remove and replace the controller circuit board. **TIP** Use a circuit board jumper (P/N 041.427.01) to momentarily short the pins.
	For a dual panel configuration, trying to run both panels simultaneously.	Only one panel can run at a time. If a flush cycle is started at one panel, that panel must complete its timed cycle before the second panel starts.

Problem	Possible Cause	Action
Flush cycle is too long or too short	Flush cycle timing requires adjustment.	Turn the timing adjustment wheel towards the “-” to decrease the flush cycle run time; towards the “+” to increase. **TIP** The cycle run time can be adjusted from 20 seconds to 150 seconds. Figure 272 **Timing Adjustment Wheel**  (A) Timing Adjustment Wheel
The low fluid indicator on the panel is always ON.	Low fluid in the fluid reservoir.	Verify the reservoir is not low on fluid. On the side of the reservoir, verify the fluid level is above the 32 oz. mark.
	The reservoir fluid level sensor switch is disconnected or not properly connected to the controller circuit board.	Verify the reservoir fluid level sensor connections from the controller circuit board to the reservoir fluid level sensor.

<table>
<tr><th>Problem</th><th>Possible Cause</th><th>Action</th></tr>
<tr><td></td><td>The reservoir fluid level sensor has failed or is installed upside down in the fluid reservoir.</td><td>The reservoir fluid level sensor is a normally open switch. When the float on the switch is raised, the switch closes. Check the continuity of the switch. The switch should close when the float is raised; open when the float is allowed to drop.
CAUTION Do not remove the reservoir fluid level sensor from the tank until the reservoir has been emptied of fluid.
TIP Installing a circuit board jumper (P/N 041.427.01) at P6 on the controller circuit board should result in DS6 turning OFF. If DS6 does not turn OFF, remove and replace the controller circuit board.
Figure 273 Fluid Level Sensor

(A) Closed Switch; (B) Open Switch</td></tr>
</table>

Problem	Possible Cause	Action
The low fluid Indicator on the panel is always OFF.	Shorted connection to the reservoir fluid level sensor.	Verify the reservoir fluid level sensor connections from the controller circuit board to the reservoir fluid level sensor.
	The reservoir fluid level sensor has failed.	The reservoir fluid level sensor is a normally open switch. When the float on the switch is raised, the switch closes. Check the continuity of the switch. The switch should close when the float is raised; open when the float is allowed to drop. **CAUTION** Do not remove the reservoir fluid level sensor from the reservoir until the reservoir has been emptied of fluid.
	Temporary/permanent controller circuit board failure.	**1.** Disconnect reservoir fluid level sensor from P6 on the controller circuit board, verify DS6 is ON. • If DS6 is ON, the reservoir fluid level sensor or wiring has failed. • If DS6 is OFF, reconnect the level sensor to P6 and cycle power to the circuit board by disconnecting mains power from P11 for 5 seconds. After reconnecting power verify DS2 is ON and that DS6 remains OFF. • Disconnect reservoir fluid level sensor from P6 on the controller PCB, verify DS6 is ON. If DS6 is OFF, replace the controller circuit board.
The ICV activates, but no fluid is used.	Fluid supply tubing to the panel has become disconnected or kinked.	Verify the tubing connections and that there are no kinks in the tubing.
	Solenoid is not properly connected to the controller circuit board.	Verify solenoids connections and wiring. Check the solenoid connections at P1 and P2 on the controller circuit board.
	Solenoid has failed.	Check the resistance of the solenoid coil for 20 Ohms +/- 2 Ohms
	Controller circuit board solenoid relay failure.	• For single treatment room configurations; move the panel and solenoid connections on the controller circuit board to the available operatory position. • For dual treatment room configurations; temporarily swap the panel and solenoid connections on the controller circuit board.

Table 32 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 32 Panel Icon and LEDs

Icon/LED	ICV Panel A or B
Power (A-dec logo)	Off = ICV is not functioning.
	Blue steady = normal condition (ready for use).
Cycle indicator	Off = Flush cycle is not running.
	Yellow steady = Flush cycle is running.
Low fluid	Off = Fluid reservoir has sufficient fluid.
	Yellow steady = Fluid reservoir is low on fluid.

Table 33 contains tips and troubleshooting information to assist in diagnosing ICV problems. The table is not intended to cover every situation, but includes the most common problems that you may encounter.

Table 33 Controller Circuit Board LEDs

LED	Status	Description
DS1 AC power	OFF	No mains voltage, open circuit breaker, mains power P11 is disconnected.
	Green Steady	Mains voltage is present.
DS2 status	OFF	System is not functioning, no power to circuit board or the circuit board has failed.
	Green Steady	Normal condition.
DS4 panel A indicator	OFF	Panel A is not being used.
	Yellow Steady	Panel A is being used.
DS5 panel B indicator	OFF	Panel B is not being used.
	Yellow Steady	Panel B is being used.

LED	Status	Description
DS6 low fluid indicator	OFF	Fluid level sensing switch is closed; the tank has sufficient fluid.
	Red Steady	Fluid level sensing switch is open; the tank has insufficient fluid.
DS11 solenoid A indicator	OFF	Panel A solenoid is not energized.
	Yellow Steady	Panel A solenoid is energized.
DS12 solenoid B indicator	OFF	Panel B solenoid is not energized.
	Yellow Steady	Panel B solenoid is energized.

INDEX

Numerics

12 O'Clock system
  Model 541 standard configuration, 121
  Model 545 standard configuration, 69, 97, 121, 153
12 O'clock system
  541 product overview, 122
  illustrated parts breakdown, 30, 32, 34, 36, 38, 40, 42, 44, 46, 82, 84, 136, 274, 396, 398, 400
  product overview, 122
531 monitor mount
  monitor mounts, 293
541
  control block assembly, 180
  cover removal, 125
  illustrated parts breakdown, 91, 141
  internal components, 123
  plumbing flow diagram, 129
542
  control block assembly, 180
545
  plumbing flow diagram, 239
561 monitor mount
  monitor mounts, 294
571 dental light IPB
  dental light, 350
6300 ceiling mount light IPB
  dental light, 356, 358
6300 Preference mount light IPB
  dental light, 360
6300 track dental light IPB
  dental light, 352

a

A-dec 571 light intensity setting
  dental light, 327
A-dec 571 switch connections
  dental light, 327
A-dec Illustrated Parts Breakdown, 4
A-dec intraoral camera
  clinical products, 374

Adjustments
    542 flexarm counterbalance, 102
    chair, 27
    cuspidor, 254
    dental light, 339
    ICV, 394
    instrumentation arm height, 132, 244
    monitor mounts, 300
    worksurface height, 132, 244
Air and water filter regulator body assembly IPB
    floor box, 277
Air and water filter regulators
    floor box, 276
Air and water filter regulators IPB
    floor box, 276
Amalgam separator housing
    components, 265
    illustrated parts breakdown, 265
    overview, 265
Antimicrobial AlphaSan tubing, 154
Arm assembly
    leveling front-to-back, 130
    leveling side-to-side, 130
Assistant’s holders
    electric, 237
    illustrated parts breakdown, 152
Assistant’s instrumentation, standard configuration of, 69, 97, 121, 153
Assistant’s touchpad
    electric holder, illustrated parts breakdown, 150
Assistant’s touchpad, illustrated parts breakdown, 152
Auto on/off function
    dental lights, 325
Autoclavable HVE,
    large bore, 219
    no tip, 218
Autoclavable saliva ejector, 220

b
Back cylinder assembly
    chair, 40
Back down
    chair, 22
Back up
    chair, 22
Base down
    chair, 22
Base up
    chair, 22
Baseplate
    chair, 30
Bowl rinse functions
    cuspidor, 254
Bump-up feature
    chair, 26

c
Cam assembly
    chair, 42
Capacitor
    chair, 23
Ceiling mount light intensity setting
    dental light, 328
Ceiling mounted light switch connections
    dental lights, 328
Chair
    adjustments, 27
    back cylinder assembly, 40
    back down, 22
    back up, 22
    base down, 22
    baseplate, 30
    bump-up feature, 26
    cam assembly, 42

capacitor, 23
circuit board, 334
circuit board components, 18
headrest, 46
Headrest adjustment, 28
headrest assembly, 46
hydraulic cylinder operation, 22
hydraulic cylinders, 22
hydraulic hose, 32
hydraulic pump, 22
hydraulic reservoir, 21
hydraulics, 21
illustrated parts breakdown, 29
lift cylinder, 34
link arm, 34
lower assembly, 36
motor, 22
motor pump assembly, 30
part identification symbols, 29
potentiometer, 25
potentiometer locations, 25
seat assembly, 44
solenoid assembly, 32
solenoids, 24
solenoids how to test, 24
springs, 42
stop plate, 26
stop switch, 26
swivel assembly, 38
swivel brake, 27
tension adjustment, 27
test solenoids, 24
tilt cylinder assembly, 40
upper, 42, 44
upper structure, 38

Chair circuit board components
    dental light, 334
Changing settings, Endodontics Mode, 58
Circuit board
    chair, 334
Circuit board components
    cuspidor, 252
Circuit board jumper locations, warm water syringe, 170
Circuit board, control
    ICV, 392
Circuit board, display
    ICV, 393
Circuit breaker locations
    dental light, 330
Clinical products, 378
    A-dec intraoral camera, 374
    EA-50LT bulb replacement, 372
    EA-50LT flow diagram, 368
    EA-51LT bulb replacement, 373
    EA-51LT flow diagram, 368
    intraoral camera, 374
    intraoral camera flow diagram, 374
    maintenance, 370
    miniLED curing light flow diagram, 382
    o-ring replacement, 370
    overview, 367
    Sopro 595 intraoral camera flow diagram, 376
    Sopro 717 intraoral camera flow diagram, 376
    SP Newtron scaler with deluxe touchpad flow diagram, 378
    SP Newtron scaler with no touchpad flow diagram, 380
    SP Newtron scaler with standard touchpad flow diagram, 380
Clutch assembly, 296
    monitor mounts, 296
Components
    amalgam separator housing, 265
Connect/disconnect tubing, quick connect fitting, 158

Continental syringes, 214
Continental warm water syringe, 216
Control block
  541 delivery system dismount, 178
  542 delivery system dismount, 178
  exploded assembly of, 180
  overview 541, 172
  overview 542, 172
  service/usage information, 178
Control center
  12 O'clock illustrated parts breakdown, 142
Control circuit board components
  ICV, 392
Control head
  542 illustrated parts breakdown, 110
Conventions
  document, 2
  formatting, 2
  part identification symbols, 2
Cover removal
  side delivery system, 118
  cover removal, 541, 125
Covers
  chair, 16
Cup fill and bowl rinse timing
  cuspidor, 255
Cup fill functions
  cuspidor, 254
Cuspidor
  adjustments and maintenance, 254
  bowl rinse functions, 254
  circuit board components, 252
  cup fill and bowl rinse timing, 255
  cup fill functions, 254
  fill/rinse manifold, 264
  flow diagram, 250
  identification of features, 248
  illustrated parts breakdown, 257
  lower assembly IPB, 262
  part identification symbols, 257
  product overview, 248
  service/usage information, 252
  systems, 247
  upper assembly IPB, 259
Customer service, 3
Cycle time adjustment
  ICV, 394
Cycle time test
  ICV, 394

d

Data communication system (DCS)
  overview of, 159
Delivery system
  542 illustrated parts breakdown of, 106
Dental Chair, 9
  covers, 16
  factory default routine, 17
  flow diagram, 14
  limp-along feature, 11
  load capacity, 11
  power on/off button, 11
  power supply, 12
  product overview, 10
  service/usage information, 16
  specifications, 11
Dental light
  571 dental light IPB, 350
  6300 ceiling mount light IPB, 356, 358
  6300 Preference mount light IPB, 360
  6300 track dental light IPB, 352
  A-dec 571 light intensity setting, 327
  adjustments and maintenance information, 339
  ceiling mount light intensity setting, 328
  chair circuit board components, 334
  circuit breaker locations, 330
  diagonal rotation of light head, 341
  flexarm, 343
  flexarm adjustments, 343
  focus adjustment, 339

    illustrated parts breakdown, 347
    lamp replacement, 345
    left/right rotation of the light head, 340
    light components on the chair circuit board, 334
    light head IPB, 348
    light head rotation, 340
    light LED identification, 338
    light LED identification on the chair circuit board, 336
    light relay board, 337
    light shield cleaning, 344
    lower 6300 ceiling mount light IPB, 358
    part identification symbols, 347
    power cable, 331
    Preference mount light intensity setting, 328
    third axis of light head, 341
    track assembly IPB, 352
    track light intensity setting, 329
    transformers, 332
    trolley assembly IPB, 354
    up/down rotation of light head, 342
    upper 6300 ceiling mount light IPB, 356
    vertical rotation of light head, 342
    wall mount light intensity setting, 328
    wall mount light IPB, 363
Dental lights, 323
    A-dec 571 light switch connections, 327
    auto on/off function, 325
    ceiling mounted light switch connections, 328
    intensity switches, 325
    nominal light tensity, 324
    on/off functions, 325
    on/off switch, 325
    Preference mounted light switch connections, 328
    product overview, 324
    service and usage information, 326
    specifications, 324
    switch connections, 326
    three-way switch, 325
    track light switch connections, 329
    wall mounted light switch connections, 328
Diagonal rotation of the light head
    dental light, 341
Dismounting control block, 178
Display circuit board components
    ICV, 393
Display panel features
    ICV, 389
Display panel IPB
    ICV, 398
Doctor's arm assembly, illustrated parts breakdown, 86, 88, 144
Doctor's holder
    components of, 126
    cover removal of, 126
Documentation, electronic, 4
Drift friction adjustment
    monitor mounts, 300
Dual panel IPB
    ICV, 400
Duo delivery system
    product overview, 122

e

EA-50LT
    maintenance, 370, 371
EA-50LT bulb replacement
    clinical products, 372
EA-50LT flow diagram
    clinical products, 368
EA-51
    maintenance, 370, 371

EA-51LT
    maintenance, 370, 371
EA-51LT bulb replacement
    clinical products, 373
EA51-LT Electric Micromotor
    factory preset speeds, 56
EA-51LT flow diagram
    clinical products, 368
Electric holder
    illustrated parts breakdown, 150
Electric holder, assistant's touchpad, 150
Electric holders
    dual assembly, 237
    single assembly, 237
    wiring diagram, 237
Endodontics Mode, 58
    handpiece settings in, 58
    settings defined, 59

f

Factory default routine
    chair, 17
Factory preset speeds, 56
Features
    ICV, 387
Fill/rinse manifold
    cuspidor, 264
Filter element replacement
    floor box, 271
Filter regulator body IPB
    floor box, 277
Filter regulator components IPB
    floor box, 276
Flexarm
    dental light, 343
Flexarm adjustments
    dental light, 343
Flexarm counterbalance, 102
Flexholder
    illustrated parts breakdown of, 206
Floor box
    air and water filter regulator body assembly IPB, 277
    air and water filter regulators IPB, 276
    filter element replacement, 271
    filter regulator body IPB, 277
    filter regulator components IPB, 276
    illustrated parts breakdown, 273
    moisture separator IPB, 278
    part identification symbols, 273
    product overview, 270
    service and maintenance information, 271
    systems, 269
    utilities module with 3′ umbilical IPB, 274
    utilities module with 3′ umbilical, no sheath IPB, 274
    without utilities IPB, 274
Flow Diagram
    chair, 14
Flow diagram
    cuspidor, 250
    foot control, 177
    ICV, 391
    side delivery wiring, 101
    support center, 250
Flow of fluid chart
    ICV, 390
Flush toggle, 164
Focus adjustment
    dental light, 339

Foot control
    accessory valve illustrated parts breakdown of, 192
    flow diagram, 177
    illustrated parts breakdown of, 190
    signal relay main body valve illustrated parts breakdown of, 195
    wet/dry toggle valve illustrated parts breakdown of, 192
Front mount monitor mount
    monitor mount, 293
Front mount monitor mount features
    monitor mounts, 293

h

Handle/bracket assembly features
    monitor mounts, 297
Handpiece holder
    positioning of, 133
Handpieces
    flush toggle, 164
Headrest
    chair, 46
Headrest adjustment
    chair, 28
Headrest assembly
    chair, 46
Holder
    assistant's 12 O'clock illustrated parts breakdown, 152
    doctor's, 133
    doctor's turret assembly, illustrated parts breakdown, 94, 146, 196, 198, 200, 202, 204
    traditional, 112
HVE, autoclavable with large bore, 219
Hydraulic cylinder operation
    chair, 22
Hydraulic cylinders
    chair, 22
Hydraulic fluid reservoir
    chair, 21
Hydraulic hose
    chair, 32
Hydraulic pump
    chair, 22
Hydraulic reservoir
    chair, 21
Hydraulic System
    Test Solenoids, 24
Hydraulic system
    Chair, 21

i

ICV
    adjustments and maintenance information, 394
    circuit board, control, 392
    circuit board, display, 393
    control circuit board components, 392
    cycle time adjustment, 394
    cycle time test, 394
    display circuit board components, 393
    display panel features, 389
    display panel IPB, 398
    dual panel IPB, 400
    features, 387
    flow diagram, 391
    flow of fluid chart, 390
    illustrated parts breakdown, 395
    main assembly components IPB, 396
    part identification symbols, 395
    product overview, 386
    service and usage information, 392
    systems, 385
    tubing and cable identification, 388

Identification of features
  cuspidor, 248
  support center, 248
Identifying switch connections
  dental lights, 326
Illustrated parts breakdown
  amalgam separator housing, 265
  chair, 29
  cuspidor, 257
  dental light, 347
  floor box, 273
  ICV, 395
Illustrated parts breakdown
  cross-system features, 179
Inside this guide, 2
Intensity switches
  dental lights, 325
Intraoral camera
  clinical products, 374
Intraoral camera flow diagram
  clinical products, 374
Intraoral light source voltage, 176

j

Jumper locations, warm water syringe circuit board, 170

l

Lamp replacement
  dental light, 345
LED
  troubleshooting table for, 426
Left/right rotation of the light head
  dental light, 340
Leveling
  arm assembly, 72, 73, 74, 79, 80, 130, 162, 165, 173, 174, 226, 227, 229, 230, 234, 242
  hub, 72, 73, 74, 79, 80, 130, 162, 165, 173, 174, 226, 227, 229, 230, 234, 242
  tray, 175
  worksurface, 131
Lift cylinder
  chair, 34
Light components on the chair circuit board
  dental light, 334
Light head IPB
  dental light, 348
Light head rotation
  dental light, 340
Light LED identification
  dental light, 338
Light LED identification on the chair circuit board
  dental light, 336
Light relay board
  dental light, 337
Light shield cleaning
  dental light, 344
Link arm
  chair, 34
Lower 6300 ceiling mount light IPB
  dental light, 358
Lower assembly
  chair, 36
Lower assembly IPB
  cuspidor, 262
  support center, 262

m
Main assembly components
    ICV, 396
Maintenance
    clinical products, 370
    EA-50LT, 370, 371
    EA-51LT, 370, 371
Manifold assembly, illustrated parts breakdown of, 185
Master on/off toggle, 163, 186
MiniLED curing light flow diagram
    clinical products, 382
Model 541
    standard configuration, 121
Model 545
    standard configuration, 69, 97, 121, 153
Model numbers, 5
Moisture separator IPB
    floor box, 278
Monitor mount
    531 monitor mount, 293
    support side monitor mount, 294
Monitor mounts
    561 monitor mount, 294
    adjustments, 300
    clutch assembly features, 296
    drift friction adjustment, 300
    front mount monitor mount, 293
    front mount monitor mount features, 293
    handle/bracket assembly features, 297
    monitor requirements, analog monitor, 292
    monitor requirements, digital monitors, 292
    monitor track mount, 295
    panning friction, track mount, 302
    product overview, 292
    specifications, 292
    support side monitor mount features, 294
    support side tray holder adjustments, 301
    systems, 291
    tilt friction adjustment, 300
    track monitor mount features, 295
    track mounted monitor, 295
    tray holder adjustment, 561, 301
    trolley assembly after February 2007, 299
    trolley assembly features, 298
    trolley before February 2007, 298
Monitor requirements, analog monitor
    monitor mounts, 292
Monitor requirements, digital monitors
    monitor mounts, 292
Monitor track mount
    clutch assembly, 296
    monitor mounts, 295
    trolley assembly, 298
Motor
    chair, 22
Motor pump assembly
    chair, 30
Mounting platform, illustrated parts breakdown, 91, 141

n
Nominal light intensity
    dental lights, 324

o
On/off functions
    dental lights, 325
On/off switch
    dental lights, 325
OrderNet, 4
O-ring replacement
    clinical products, 370

Overview
    amalgam separator housing, 265
    clinical products, 367
    programming, 49

p

Panning friction, track mount
    monitor mounts, 302
Part identification symbols
    chair, 29
    cuspidor, 257
    dental light, 347
    floor box, 273
    ICV, 395
Parts catalog, 4
Potentiometer
    chair, 25
Power cable
    dental light, 331
Preference mount light intensity setting
    dental light, 328
Preference mounted light switch connections
    dental lights, 328
Product Overview
    dental chair, 10
Product overview
    12 O'clock system, 122
    cuspidor, 248
    dental lights, 324
    floor box, 270
    ICV, 386
    monitor mounts, 292
    side delivery system, 98
    support side, 248
    12 O'clock system, 122
Programming
    handpiece settings, Endodontics Mode, 58
    handpiece settings in Standard Mode, 56
    Overview, 49
    touchpad in standard mode, 56

q

Quick connect fittings
    connect/disconnect tubing, 158

s

Saliva ejector, 220
Scaler, 378
Seat assembly
    chair, 44
Self-contained water bottle
    overview of, 167
Serial number, 5, 6
Service and maintenance information
    floor box, 271
Service and usage information
    dental lights, 326
    ICV, 392
Service/Usage Information
    dental chair, 16
Service/usage information
    chair, 16
    cuspidor, 252
Serviceable Components, 3, 206
Side delivery system
    adjust tray holder, 175
    cover removal, 118
    covers and brake illustrated parts breakdown, 108
    illustrated parts breakdown of, 104
    plumbing flow diagram, 100, 233

product overview, 98
wiring flow diagram, 101
Solenoid
chair, 24, 32
Solids collector
removal, 238
replace screen, 238
Sopro 595 intraoral camera flow diagram
clinical products, 376
Sopro 717 intraoral camera flow diagram
clinical products, 376
SP Newtron scaler
clinical products, 378
SP Newtron scaler with deluxe touchpad flow diagram
clinical products, 378
SP Newtron scaler with no touchpad flow diagram
clinical products, 380
SP Newtron scaler with standard touchpad flow diagram
clinical products, 380
Specifications
dental lights, 324
monitor mounts, 292
warm water syringe, 170
Speeds, factory presets, 56
Springs
chair, 42
Standard Mode
handpiece settings, 56
Standard mode, usage in, 56
Stop plate
chair, 26
Stop switch
chair, 26
Support, 3
Support center
flow diagram, 250
identification of features, 248
lower assembly IPB, 262
systems, 247
Support side
product overview, 248
Support side monitor mount
monitor mounts, 294
Support side monitor mount features
monitor mounts, 294
Support side tray holder adjustments
monitor mounts, 301
Support, contact information, 3
Swivel assembly
chair, 38
Swivel brake
chair, 27
syringe
autoclavable models, 168
continental, 214
continental illustrated parts breakdown of, 214
traditional, 214
traditional illustrated parts breakdown of, 214
troubleshooting, 405, 438
warm water circuit board, 170
warm water components, 169
warm water continental illustrated parts breakdown of, 216
warm water temperature selection, 170
warm water temperature selection input, 170
warm water traditional illustrated parts breakdown of, 216

Systems, 49, 67, 269, 279, 291, 385
    cuspidor, 247
    floor box, 269
    ICV, 385
    monitor mounts, 291
    support center, 247

t

Technical packet, 4
Tension adjustment
    chair, 27
Test solenoids
    chair, 24
Third axis of light head
    dental light, 341
Three-way switch
    dental lights, 325
Tilt cylinder assembly
    chair, 40
Tilt friction adjustment
    monitor mounts, 300
Tools, recommended, 7
Touchpad
    programming of standard mode, 56
touchpad
    assistant's 12 O'clock illustrated parts breakdown, 152
Track assembly IPB
    dental light, 352
Track light intensity setting
    dental light, 329
Track light switch connections
    dental lights, 329
Track monitor mount features
    monitor mounts, 295
Track mounted monitor
    monitor mounts, 295
Traditional syringes, 214
Traditional warm water syringe, 216
Transformers
    dental light, 332
Tray holder
    adjust side delivery, 175
Tray holder adjustment, 561
    monitor mounts, 301
Tray level, 175
Trolley assembly after February 2007
    monitor mounts, 299
Trolley assembly before February 2007
    monitor mounts, 298
Trolley assembly features
    monitor mounts, 298
Trolley assembly IPB
    dental light, 354
Troubleshooting
    LED, 426
    syringes, 405, 438
Tubing
    overview of, 154
Tubing and cable identification
    ICV, 388

u

Up/down rotation of light head
    dental light, 342
Upper
    chair, 42, 44
Upper 6300 ceiling mount light IPB
    dental light, 356

Upper assembly IPB
  cuspidor, 259
Upper structure
  chair, 38
Usage in standard mode, 56
Utilities module with 3′ umbilical IPB
  floor box, 274
Utilities module with 3′ umbilical, no sheath IPB
  floor box, 274

V

Vacuum/upper structure assembly
  illustrated parts breakdown, 148
Vertical rotation of light head
  dental light, 342
Voltage, intraoral light source, 176

W

Wall mount light intensity setting
  dental light, 328
Wall mount light IPB
  dental light, 363
Wall mounted light connections
  dental lights, 328
Warm water syringe, 169, 216
  circuit board descriptions, 170
  circuit board jumper locations, 170
  specifications, 170
  temperature selection, 170
Water bottle
  self-contained assembly illustrated parts breakdown of, 210
  self-contained illustrated parts breakdown of, 208
  self-contained kit illustrated parts breakdown of, 212
  self-contained, operation of, 167
Wet/dry toggle valve, 192
Worksurface
  illustrated parts breakdown, 138
  leveling, 131

85.0816.00
Rev B 2007-04 (PCA 05697)
Copyright A-dec 2007
All rights reserved.

A-dec Inc.
2601 Crestview Drive
Newberg, OR 97132 USA
Tel: 1.800.547.1833 within N.A.
Tel: 1.503.538.7478 outside N.A.
www.a-dec.biz
www.a-dec.com

A-dec International Inc.
2601 Crestview Drive
Newberg, OR 97132 USA
Tel: 1.503.538.9471
www.a-dec.biz
www.a-dec.com

A-dec United Kingdom
Austin House, 11 Liberty Way
Nuneaton, Warwickshire CV11 6RZ
England
Tel: 0800 ADECUK (233285) within UK
Tel: 44 24 7635 0901 outside UK
www.a-dec.co.uk

A-dec Australia
Unit 8, 5-9 Ricketty Street
Mascot, NSW 2020
Australia
Tel: 1 800 225 010 within Australia
(02) 8332 4000 outside Australia
www.a-dec.com.au